THE BUILDER

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ARCHITECTURE & THE BRITISH ARCHITECT

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THIS WEEK'S NEWS

THAT the Building Apprenticeship Training Council should invite the co-operation of the Press of the whole country in publishing the advantages of apprenticeship in the building crafts is suggested by a correspondent. p. 345

THE PROGRESS made at Crawley is the subject of the third article in our series on the New Towns. p. 346

THE BUILDING RESEARCH CONGRESS opened in London on September 12. A review of the influence of mechanisation and prefabrication on techniques and cost of building was given by Mr. R. Fitzmaurice of the Building Research Station and we publish some extracts from his remarks. p. 355

THE HOUSING SUMMARY presented to Parliament on September 6 showed that the number of permanent houses completed in Great Britain during July was 15,965, compared with 17,203 in June. p. 360

"GOOD TOOLS and the best text-books combined with a greater sense of moral integrity and mental awareness are the most important factors for furthering the oldest industry in Britain," was the advice given by Mr. Woodbine Parish to building apprentices. p. 366

THE WAR DAMAGE COMMISSION have paid out £1,000m. since April, 1941, when they made the first payment. During the war some 3,420,000 buildings in Great Britain and Northern Ireland were damaged or destroyed by enemy action. Over 40 per cent. of these were in the Greater London Area. p. 367

HOME TOWN ARCHITECT

HOLIDAYS are very disturbing ; they leave us in a frame of mind which questions whether they are in themselves a mistake or whether all other moments of the year are the mistake. Fortunately, we recover from them fairly quickly and, after we have more or less successfully coped with the mountain of arrears which faced us on our return, our nerves are not more shattered than they were before we started.

But it is the purpose of holidays to disturb ; they break a routine which always threatens to make our work stereotyped, and reopen certain trapdoors in the mind which remain firmly closed as we go about the normal daily round. During the brief break we tend to see things in a different light. How many London practitioners, as they drive their loaded cars through the country towns of England and catch a glance of a bronze plate, lettered in Roman type not exceeding two inches in height, reading, "JOHN SMITH AND SON, CHARTERED ARCHITECTS," have not wondered how much the life of the country practitioner differs from their own ? Here are people who have probably never seen a rolled umbrella nor, for more than a week or two at a time, a really respectable hat. Here they are operating in streets peopled with familiar faces, dealing with people they have known for many years, with their offices serving their friendly public like the consulting room of a family doctor. They do not reach their work in the morning after a stuffy train journey, followed by a scramble in the bowels of the earth, but run their cars a mile or two through the country lanes, or, maybe, walk through pleasant roads and streets for 20 minutes or so between home and office. At mid-day, they drop back home for a family lunch, and when evening comes the end of work means not another mad scramble among the crowds but the beginning of relaxation directly the office door closes.

When the country architect is at work his jobs are near at hand, and the people he does business with are mostly within a short walk of the office. When they do business with him they share the local interests of a small community. Why, oh, why, did we nail up our plate in an ugly hall-way of a multi-storeyed building in London, when we might have settled ourselves thus happily in a pleasant town surrounded by the countryside? Money? The very sound of it turns bitter in the mouth !

That is, of course, the rosy picture which presents itself to the passing holiday-maker who has had just about as much as he can stand of the daily routine his choice of calling has imposed upon him, and to some extent it is not so very wide of the mark. The country architect does indeed live with his work and stays closer to, and more intimate with the job than any London man can hope to be. And it is a good thing for his architecture that it should be so, for architecture is first and foremost building, with the drawing board as a means to the end.

But country practice is not all hollyhocks and thatch ; it carries with it many of the worries and frustrations which the Londoner experiences. Licensing is at least as difficult and Town Planning just as greedy of paper. Clients are not all mellowed by the charm of the countryside, and builders not invariably filled with the respect for the architect which marked the more formal days of the Good Queen and her heir. Neither is the expert on the doorstep, ready to come round to the office at the first call ; his services mean appointments made well ahead and planned with a controlled impatience. Nor does the local museum or library carry all the material for research which the architect's work often entails ; he has to make his frequent pilgrimage to the smoke of London, and though he may hurry back to his pleasant home, these journeys probably try him more than the Londoner to whom they are a daily habit.

The bigger prizes of London practice are not open to him, for his practice must be based mainly upon small things well

done if he is to become firmly established in his town. Many of these small things are dull, unattractive and have less meat on the bones—that is the price he must pay. The sun on the red brick and white paint of the country town through which the London pilgrim passes, and which kindles his envy, does cast upon the inviting picture a shadow or two which the casual eye may miss. In short, life is a story of obligations and compensations, and perhaps the secret of living is to get them fairly balanced so that we pay justly for our pleasures with a cheerful carrying out of less pleasant duties.

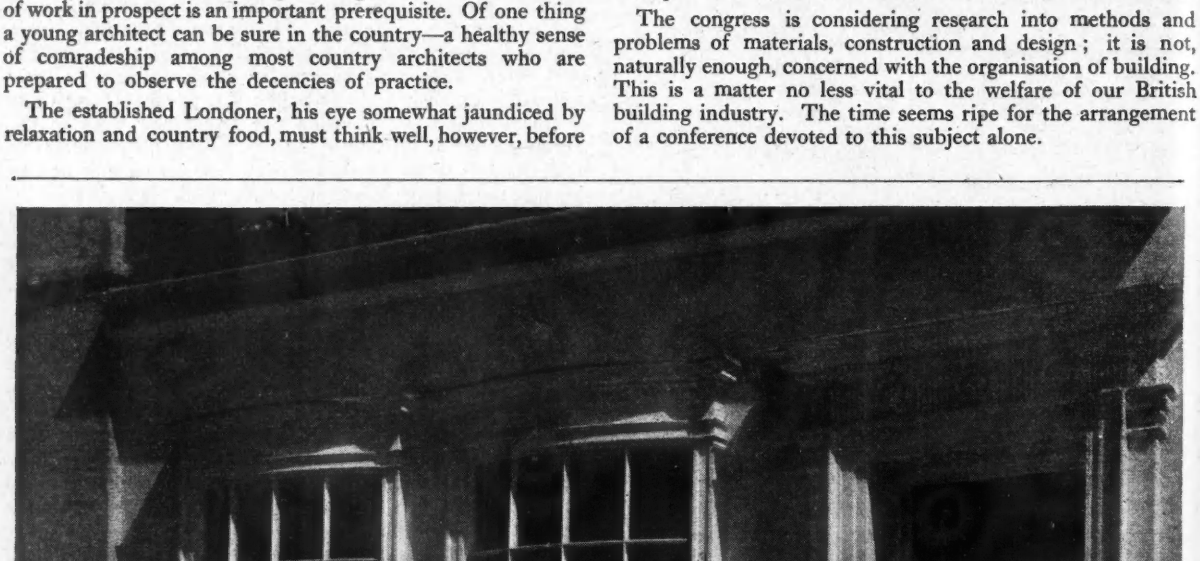
But let the young man who is on the threshold of practice think well before he makes his choice. A London office contains no magic unless it is based upon some substantial nucleus of work. London is a wilderness to the stranger, and an expensive wilderness at that, whereas one's own home town is a fertile garden if hopes and ambitions are not allowed to outstrip the possible. There the great adventure of practice can usually be undertaken with less financial risk and in much pleasanter surroundings, though even then a nucleus of work in prospect is an important prerequisite. Of one thing a young architect can be sure in the country—a healthy sense of comradeship among most country architects who are prepared to observe the decencies of practice.

The established Londoner, his eye somewhat jaundiced by relaxation and country food, must think well, however, before changing his lot. Building, wherever it is undertaken, will always gather its load of worries, and a change of headquarters from the City to the country does not ensure a passage to heaven from its antithesis. We mostly find ourselves where fate has placed us, and it remains for us to make the most of our lot and, if we are architects, to create for ourselves the conditions which best promote the practice of the delightful art which we are privileged to serve.

BUILDING RESEARCH

THE Building Research Congress which opened in London on Tuesday is a unique occasion in that it is the first congress which has had as its sole object the constructional problems of building. That over 1,200 delegates—300 of them from abroad—should be in attendance is a fact which in itself points to the importance which the whole scientific world attaches to the research needs of the great industry of building—an industry which, in the words of Lord Samuel, is responsible for the environment of our modern civilisation.

The congress is considering research into methods and problems of materials, construction and design; it is not, naturally enough, concerned with the organisation of building. This is a matter no less vital to the welfare of our British building industry. The time seems ripe for the arrangement of a conference devoted to this subject alone.



Messrs. Tiranti, the architectural publishers and booksellers, have been established in Charlotte-street, W.1., for some time in premises near John Constable's house. Recently they decided to add a shopfront in character with the district. One of the conditions imposed by the town planning authorities was that no alteration should be made to the existing opening. Following eighteenth-century precedent, two bow windows have been applied to form a continuous shopfront. This successful arrangement has not destroyed the character of the old building. Professor A. E. Richardson, R.A., F.R.I.B.A., and E. A. S. Houfe, F.R.I.B.A., were the architects for the work.

NOTES & NEWS

BUILDING RESEARCH CONGRESS

THE BUILDING RESEARCH CONGRESS, which is being attended by 1,200 members from many countries and is the first of its kind ever to be held, was opened by Lord Samuel in London on Tuesday.

Lord Samuel said the goodwill message which had been received from the King, and the active participation of the Government, had been a recognition of the congress's public importance. It touched a fundamental question—what kind of homes, of streets, of cities, should we give to our peoples? What kind of an environment should we provide for our modern civilisation? The *laissez-faire* of the nineteenth century, carried to excess, had left to the twentieth a deplorable heritage—the industrial quarters of most of our great towns, with their mean, drab, characterless streets, occasional slums and constant over-crowding, with few trees or gardens, parks or open spaces—these were the surroundings in which children were born and bred, these were the influences that had helped to mould the bodies, minds and characters of men and women, one generation after another.

"But during this century a great social effort has been made to remedy these evils," said Lord Samuel. "In this country, statute after statute has been passed to secure the better planning both of town and countryside. Garden suburbs, green belts, open spaces, roads lined with trees, new towns planned from the beginnings as models for the future, and now the preservation of the most beautiful parts of this island as national parks—these have opened up great possibilities. At the same time science, theoretical and applied, has given to the architect, the builder, the engineer and the craftsman new technologies. He works now not merely with wood, stone and brick, but with ferro-concrete and steel, with new plastic materials, and aided by electricity to work the lifts which have changed the elevation and the sky-line of modern cities. It is an age of unprecedented opportunities, but of many new technical problems, demanding continual scientific research to handle them.

"Hence this congress, which will help to make known everywhere the results of research already attained, and to encourage the pursuit of new achievements."

The congress is sponsored by professional institutions and learned societies of Great Britain and the Department of Scientific and Industrial Research with the support of industrial federations and the Ministry of Works.

THE END OF THE FESTIVAL

A BROADCAST BY THE KING, which will be relayed throughout the South Bank Exhibition, will mark the closing of the Festival of Britain on Sunday, September 30. The King's broadcast, which will be at 9.15 p.m. in the Home service, will be followed on the Fairway at the South Bank by the beating of Tattoo by the massed bands of the Brigade of Guards; after this the bands will take up position on the podium of the Dome of Discovery and, joined by a large choir, will play songs for community singing. Afterwards the lights will go out, and the closing of the Festival will be symbolised by the lowering of the Union Jack and Festival flags, which will be spotlighted for the purpose. Saturday, September 29 will be a gala evening at the South Bank, with dancing and a cabaret show.

Announcing this at a Press conference last Friday, Sir Gerald Barry, Director-General of the Festival of Britain, gave some facts and figures concerning the success of the South Bank Exhibition, and spoke of arrangements for the future of the buildings and site. While he could not anticipate the Lord Privy Seal's statement to Parliament on the Festival finances, Sir Gerald said that the total attendance up to September 7 had been 6,562,172, and the turnstile revenue £1,300,000; this represented an average daily attendance (Tuesdays excluded) of over 56,000. The cost of the South Bank Exhibition had previously been given as £6.5m. Attendance at all the Festival exhibitions in London alone, including the Festival Gardens, was estimated at some 16 millions, or a third of the total population of Britain. This "remarkable figure" reflected the widespread interest in the Festival.

DISPOSAL OF EXHIBITS

OF THE DISPOSAL of the exhibits and buildings, Sir Gerald Barry said that the Festival Council was very anxious to comply with the idea that national exhibitions throughout the country should benefit from the disposal of the artistic and scientific exhibits. He thought that one or two buildings in the Downstream section could possibly be put to good use, pending permanent development of the site. A Working Party representing all the interested bodies was at present busy examining the future use of the site. One thing he could say was that they wanted to avoid at all costs the "ironic development" of the site becoming an eyesore.

In regard to the Skylon, and other features, the Festival authorities were open to financial offers, but they would be guided also in their policy of disposal by the use to which it was intended to put the various objects and buildings.

The L.C.C. was one of the bodies interested in the future of the Dome of Discovery, and he understood they were considering its removal to the site of the old Crystal Palace. The Arts Council was interested in the Lion and Unicorn Pavilion, which, with modifications, could be used for loan exhibitions. London was greatly in need of such a gallery. The National Film Institute was interested in keeping the Telekinema. The large administration block by Waterloo Bridge might well continue to be used for office accommodation.

Sir Gerald Barry added the welcome news that it was the intention to allow permanent public access to the new river embankment.

COVENTRY CATHEDRAL

THE Coventry Cathedral Reconstruction Committee, at a meeting on Tuesday, unanimously approved the design of Mr. Basil Spence, O.B.E., F.R.I.B.A., for the new Coventry Cathedral. All the members of the committee were present. The resolution which was passed requested the authority of the Cathedral Council and of the Joint Council of the Christian Service Centre to proceed with the work.

The Cathedral Council will meet on September 19, and the Joint Council on September 24. The design will afterwards be submitted to Coventry City Council for planning permission. A sub-committee was appointed to-day for discussions with Mr. Spence immediately on his return from abroad.

"HISTORY IN STONE"

VISITORS from overseas, and Britons who spend leisure time seeing their own country, can obtain a twelve-month season ticket to enter some 400 ancient monuments and historic buildings in the care of the Ministry of Works. The tickets cost £1 each, and admit two people as many times as they wish in the twelve months' period to a number of historic castles and monuments for which the normal charge is 6d. or 1s. per person. The Tower of London, Hampton Court, Holyrood House, Harlech Castle, Audley End Mansion, Carisbrooke Castle, Osborne House, Lindisfarne Priory and Stonehenge are some examples of the places included.

Complete lists of places which may be visited, tickets, posters and a showcard "The History of Britain in Stone," have been distributed to the British Travel and Holidays Association, and to 276 travel agencies and other bodies connected with the tourist industry. The tickets can also be obtained from the Ministry of Works (A.S. 22), Lambeth Bridge House, S.E.1.

A MAP OF STAFFORDSHIRE

TO MARK the Festival of Britain the Staffordshire County Council have issued a special map of the county "illustrating its historic buildings and places of natural beauty and the most important industries of its towns and countryside." Over 300 such buildings and beauty spots are illustrated on the map, and a guide to the towns and villages is printed on the back giving details of these, and an indication of the most important industrial products.

An attempt has been made to follow the tradition of the older historic maps and to indicate the character of towns and

COMING EVENTS

MONDAY, SEPTEMBER 17

TOWN PLANNING INSTITUTE.—Opening of Town and Country Planning Summer School. Oxford. Continuing until September 22.

THURSDAY, SEPTEMBER 20

INSTITUTE OF HOUSING.—Conference at Scarborough. Sir Thomas Bennett on "Productivity in the Building Industry" (Thursday). Mr. H. C. Hampton on "Economics of Maintenance" (Friday). Mr. Hugh R. Ralph on "Making Ends Meet" (Friday afternoon). Institute Dinner (Friday evening).

SATURDAY, SEPTEMBER 22

LONDON BUILDERS' FOREMEN'S ASSOCIATION. — Annual Ladies' Festival. Connaught Rooms, Great Queen-street, W.C.2. 6 p.m.

places by a pictorial representation of their most significant buildings or products. The map is most attractive in appearance, and the County Planning Department are to be congratulated on its design. It is printed in colour and is suitable for framing or for use as a road map and guide. The price is modest, one shilling.

EXCAVATIONS AT GLASTONBURY

THE JOINT COMMITTEE of the Society of Antiquaries and the Somerset Archaeological Society has been reconstituted and two weeks' work has been carried out at Glastonbury Abbey under the direction of Mr. C. A. Ralegh Radford. Excavations at the Abbey were carried out for many years before the war and suspended in 1939.

Recent work commenced at the south-west corner of the cloister, which was where exploration left off in 1939. Remains of the twelfth-century monastery erected by Abbot Henry of Blois were unearthed. At an even lower level walls belonging to the buildings erected by St. Dunstan in the middle of the tenth century have now been identified. Remains of this period are fragmentary and cut through by later constructions and demolished almost to floor level.

The present discoveries may lead to a recovery of the whole plan of the buildings. A monastery on such a scale may be compared with the largest contemporary abbey on the Continent, such as Cluny, which has been investigated.

ANOTHER A.B.S. BALL

OWING to the success of last year's centenary ball of the Architects' Benevolent Society it has been decided to hold another ball this year, and the largest ballroom at the Dorchester Hotel has been booked for the purpose for December 12. The tickets are two guineas each including supper, and dancing will be from 8.30 p.m. to 2 a.m. to Charles Ernesco and his No. 1 dance orchestra. There will be a cabaret, side-shows, competitions and prizes. Tables may be reserved for large parties, and applications for tickets should be made to the Hon. Organiser, c/o The Architects' Benevolent Society, 56, Portland-place, W.1.

PROFESSIONAL ANNOUNCEMENT

MR. S. D. JACOMB, L.F.S.(Eng.)(Quant.), incorporated quantity surveyor and valuer, has recently relinquished his post as chief quantity surveyor to the Contracts Branch of the Festival of Britain, and has now opened an office at 52, Oakfield-road, Ilford, where he will be glad to receive trade catalogues, etc.

FROM "THE BUILDER" OF 1851

Saturday, September 13, 1851

THE SMOKE NUISANCE—GLASGOW.—We are glad to hear that a committee of the Glasgow Municipal Police Board for the abatement of the smoke nuisance, agreeably to instructions given at a late meeting of the Board, have appointed an *Inspector of Smoke*, whose duties will be to demonstrate the practicability of consuming sooty exhalations, and, in the event of smoke producers remaining obstinate, to bring them before the magistrates, who, under the provisions of the Local Act, have full powers to compel the removal of the nuisance. We must take this subject seriously in hand, presently, for London.

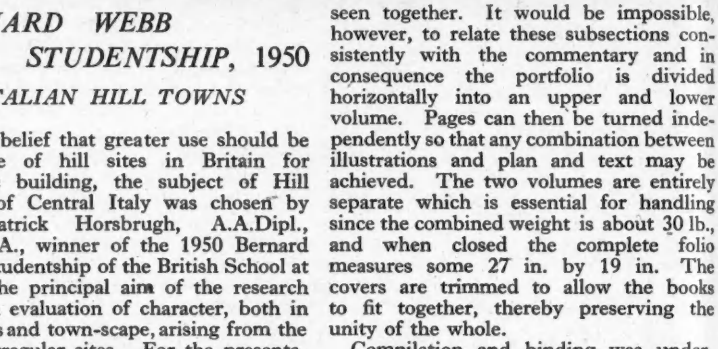
BERNARD WEBB STUDENTSHIP, 1950

ITALIAN HILL TOWNS

IN the belief that greater use should be made of hill sites in Britain for domestic building, the subject of Hill Towns of Central Italy was chosen by Mr. Patrick Horsbrugh, A.A.Dipl., A.R.I.B.A., winner of the 1950 Bernard Webb Studentship of the British School at Rome, the principal aim of the research being an evaluation of character, both in buildings and town-scape, arising from the use of irregular sites. For the presentation of the varied material which was gathered, a scrap-book-like-volume was needed which would enable the typing, photographic printing, the binding and preparation of sketches to proceed simultaneously; such a format should also allow of subsequent alterations to be made without damage to page or illustration.

The portfolio is designed so that plans, sketches, photographs and text may be seen together. It would be impossible, however, to relate these subsections consistently with the commentary and in consequence the portfolio is divided horizontally into an upper and lower volume. Pages can then be turned independently so that any combination between illustrations and plan and text may be achieved. The two volumes are entirely separate which is essential for handling since the combined weight is about 30 lb., and when closed the complete folio measures some 27 in. by 19 in. The covers are trimmed to allow the books to fit together, thereby preserving the unity of the whole.

Compilation and binding was undertaken in a spirit of experiment, and was most faithfully carried out by the St. John and British Red Cross Hospital Library Department, No. 1 Grosvenor-crescent. The materials include coloured mounting paper for the pages, blue for the upper and brown for the lower volume; maroon Cape Levant leather, tooled and gilded; and hand-printed linen for the covers and end-papers.



CORRESPONDENCE

LONDON BUILDERS' CONFERENCE

To the Editor of *The Builder*

SIR,—I entirely agree with Sir Alfred Hurst's statement in his letter in *The Builder* of August 31, that the extent to which price competition should be applied in any circumstances is "What will give the best results for all concerned," but to my mind the moral principle should be of major concern in this.

It is surely a basic commercial principle that the actions of any party should not be capable of any misinterpretation. It is the very practices which Sir Alfred Hurst outlined in the three penultimate paragraphs of his letter of August 17, which are to my mind unethical and which, far from being an answer to my criticisms, set out the procedures of which I am critical.

PHILIP H. P. BENNETT.
[M.A., A.R.I.B.A.]

43, Bloomsbury-square, W.C.1.

To the Editor of *The Builder*

SIR,—I have read with interest your recent leading articles and subsequent correspondence regarding the London Builders' Conference, and whilst I have no idea of the membership of the Conference I have grave doubts that its numerical strength is such that it can materially affect the ultimate result of tenders.

The fear expressed in your leading articles and the correspondence on the subject leaves no doubt that the R.I.B.A. consider that a price ring is operating at the expense of the building owner, and the declaration recommended for use by the Institute's Practice Committee serves only to protect the employer against a possible inflated or uneconomical tender.

I would suggest that the R.I.B.A. could well give their attention to another matter which would ultimately result in more competitive estimating, and earn the everlasting appreciation of the builders, by issuing a direction to all their members to see that final accounts are completed and certified within the contractual period.

My experience is such that I can only recall one instance since the war when the final certificate has been so issued, and I feel sure that the aggregate of capital so released would materially affect the tendering for future contracts.

J. H. PARFITT.

856, Harrow-road, Wembley.

APPRENTICESHIP IN THE BUILDING INDUSTRY

To the Editor of *The Builder*

SIR,—From the summary of the report of the Building Apprenticeship and Training Council to the Minister of Works, published in your issue for August 31, and from the comments in your last week's leading article, it appears that much more exact information is needed before sound conclusions can be reached on the cause or causes of the shortage of apprentices in the building industry. Until that information is supplied, all comment on the situation must be more or less speculative, but there is one aspect of the problem that could be followed up constructively in the meantime.

If we assume, as we must, that the industry, if for no higher motive than that of self-preservation, is prepared to do its part, we should lose no time in bringing home to parents and boys alike the opportunities offered for a full, useful and rewarding career by the building industry. The task is not an easy one, for a variety of reasons. The ever-present temptation of the easy money that can be picked up at once in dead-end occupations is perhaps the chief obstacle to apprenticeship. Parents and boys should be shown that, although apprenticeship must inevitably mean little money for a few years, the loss is superabundantly compensated for later on; indeed, that contrary to normal proverbial teaching, a bird in the bush is worth two in the hand.

I suggest that the B.A.T.C. should invite the co-operation of the Press of the whole country—national, technical and local—in publicising the advantages of apprenticeship to one of the building crafts. The facts could be made to speak convincingly to all thoughtful people who are willing to take the long view. It should be pointed out that, apart from the obvious benefit to a boy of having a skilled trade in his hands, the building industry provides the following special advantages :—

(1) The satisfaction of doing interesting creative work under healthy conditions;

(2) Security of employment in the foreseeable future at good wages, supplemented by generous bonus payments;

(3) Excellent opportunities for advancement to highly-paid technical and administrative posts.

Action along these lines would, I believe, bring satisfactory results.

ONLOOKER.

EFFLORESCENCE ON BRICKWORK

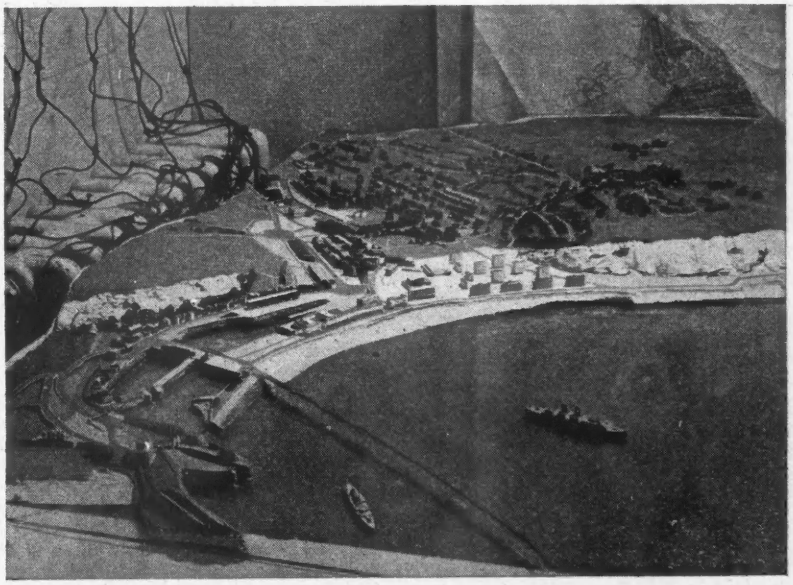
To the Editor of *The Builder*

SIR,—Referring to "Staff Architect's" inquiry in your issue of August 31 for a cure for efflorescence on brick walls, there can surely be no doubt whether the damp is rising from the ground, and if that is so, the only cure is to cut away and insert an efficient damp proof course. If the damp comes from some other source, effective steps must be taken to cure it.

The Building Research Station's "Questions and Answers" published with the R.I.B.A. *Journal* dealt with efflorescence in brickwork in Series 2 No. 30 and Series 3 Nos. 193 and 227, and I would strongly recommend "Staff Architect" to consult the Building Research Station at Garston, Watford, Herts., before undertaking expensive work which might not cure the trouble.

D. A. FORSTER.

6, Brewer-street,
Maidstone, Kent.



THIS MODEL of the scheme for the redevelopment of the central area of Dover was the outstanding feature of the annual exhibition of students' work held recently by the School of Architecture of the City of Canterbury College of Art and Crafts. To restore the rateable values which are being lost to rural areas the scheme proposes the building of flats with "point" blocks at the centre and terrace types along the sea front, the latter being designed to harmonise with the surviving nineteenth-century terraces. The scheme also includes reconstruction in the market place with a departmental store and shops, a new bus station and a variety theatre. The exhibition was one of the many attractions in Canterbury during the Festival celebrations. The principal of the School of Art is Mr. A. Moody, A.R.C.A.

COMPETITION NEWS

AUSTRALIAN WAR MEMORIAL

FIFTY-NINE ENTRIES were received in the competition for a design for an Australian War Memorial which it was proposed to construct outside the entrance to Australia House, London. They were considered by a panel of assessors whose recommendations were supported by the Designs Committee of The Australian Battlefields Memorial Committee and the awards were :

First prize : £A250—Mr. George H. Paulin, 25, Woronzow-road, St. Johns Wood, London. Second prize : £A150—Mr. Darsia Rawlins, " Red Tiles," Kingswood-avenue, Penn, Bucks. Third prize : £A50—Mr. E. Bainbridge-Copnall, Headmaster, Sir John Cass Technical Institute, School of Arts and Crafts, Jewry-street, London.

In the opinion of the assessors and the Designs Committee, none of the designs reached the standard required for the memorial, and no action will be taken to proceed with construction of any of the prize-winning entries.

HERZL MEMORIAL COMPETITION

SIXTY-THREE COMPETITORS submitted designs for a memorial to Dr. Theodor Herzl, founder of the Zionist organisation, to be erected on Mount Herzl, Jerusalem. The competition was arranged by the executive of the organisation. The awards recently announced, are :—

First prize : £1,200 Israeli : Joseph Klarwein, Jerusalem ; Second prize : £900 J. Danziger, London and Jacob Shalgi, Tel Aviv ; three prizes of £450 : B. Sumner Grazen, Art Associates, New York ; Jean Sakarovitch, Paris ; M. Weinraub and A. Mansfield, Haifa. Three prizes of £300 were given to Moritz Hauser, Zurich ; Oscar Nitzchke, New York and Z. Rechtev, Tel Aviv. S. Bernstein, Tel Aviv ; Helene and Henrik Frankouski-Frankfurt, Tel Aviv ; and N. Solotov, Tel Aviv were awarded prizes of £225.

Ten of the entries were from British (Jewish) architects. The winning design represents a six metre high, dome-like, structure surmounted by a 32 metre, in diameter, cupola, which rests on 44 arches, symbolising the 44 years of Herzl's life.

Five circular steps symbolising the Five Continents from which Jews have yet to be brought to Israel lead up to a platform in the centre of which is a Star of David shaped tomb surrounded by a flower garden.

COMPETITION OPEN

COLLEGE OF FURTHER EDUCATION, POOLE.—Promoted by Dorset County Council. Premiums : £1,000, £500 and £300. Assessors : Mr. Julian Leathart, F.R.I.B.A. Mr. S. A. W. J. Johnson-Marshall, B.Arch., A.R.I.B.A., Mr. H. E. Matthews, F.R.I.B.A., Mr. J. Haynes, M.A. (County Education Officer), and Mr. H. J. Shelley, O.B.E. (Chief Inspector M. of E.). Conditions from : Clerk to County Council, County Hall, Dorchester, Dorset. Dep. £1 1s. Closing date for designs : September 30, 1951. *February 23, 1951.*

Date in italics at the end of paragraph refers to issue of "The Builder" in which details of the competition appeared.

PROGRESS ON THE NEW TOWNS

3.—CRAWLEY

By Our Special Representative

REMARKS have been made from time to time about the non-appearance of the New Towns, and it is true that only recently have they provided the public with much visual evidence of their existence. Much hard work has, however, already been put into all the earlier projects, and if the New Towns are rather like icebergs, with four-fifths of their bulk submerged and out of sight, this is a factor inherent in such large and complex schemes, and cannot be laid at the feet of the planners, architects and others responsible for the towns.

Bearing these factors in mind, Crawley's performance to date is highly creditable. The number of homes completed to the end of July was 283, but, of greater significance, the number under construction at that date was 650, while from the end of this year the Development Corporation under the guidance of its Chairman, Sir Thomas Bennett, C.B.E., F.R.I.B.A., hopes to have reached the stage when 1,000 houses and flats will be under construction continuously until the town is completed and reaches its ultimate population of 50,000 to 60,000 in 10 to 15 years' time. But housing is only part of the story, and the success of the Corporation's industrial policy is already apparent in the fact that the number of applications for new factories greatly exceeds the supply ; at the present time 50 acres of the industrial area are under development, and 13 acres are occupied.

THE PLANNING ASPECT

From the planning aspect, one of the first problems at Crawley arose from the fact that the New Town had to be welded on to an already substantial town of 9,000 inhabitants, possessing altogether 177 shops and a picturesque old High-street. The problem was not made easier by the fact that Crawley lies partly in West Sussex, partly in East Sussex and, to the north, partly in Surrey, and thus comes under three separate county councils, with further subdivisions under three local councils.

Situated as it is on the main London-Brighton road and railway (the main line actually passes through Three Bridges) there can be little doubt that Crawley would have grown very considerably had no New Town been planned, the difference being that it now has every chance of becoming a well-balanced self-contained community instead of an urban sprawl, most of whose working members added to the congestion of the trains in and out of London. The Master Plan had to cater, accordingly, to allow of an harmonious blending of the old and the new.

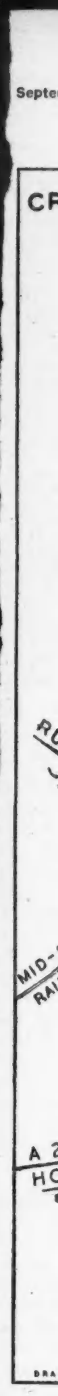
The designation Order for the New Town was made in 1947, and during 1948 the Master Plan was drawn up by Mr. Anthony Minoprio, M.A., B.Arch., F.R.I.B.A., A.M.T.P.I. Briefly, the Master Plan (described in detail in *The Builder* of January 7, 1949) was practical and economical in its approach, and sought to make the best use of terrain and the existing communications. The first houses began to appear in 1949, in Smalls Mead, and another landmark was passed in January, 1950, when Princess Elizabeth opened the first half a mile of Manor Royal, the main road in the industrial site. By completing this section of road, with all services, the Corporation had something tangible to offer industrialists who might wish to set up in the new town, and here it may be said that the policy of having " something to sell " has paid good dividends ; the number of industries wishing to move to Crawley now far out-number those that can be accepted, thus giving the Corporation the opportunity to accept only those considered most suitable for the New Town.

SELECTION OF TENANTS

Thus Crawley has come to-day to the stage when residential neighbourhoods and industry are developing harmoniously side by side, and the prime purpose of the New Towns in the Home Counties, relieving the congestion of London, is being achieved, if as yet but slowly. It is important not to lose sight of this purpose, and a description of the selection of newcomers to the town may not, therefore, be out of place.

A firm wishing to come to Crawley informs its staff and workpeople of the proposed move and a visit to Crawley is arranged. At Crawley the whole scheme is explained to the visitors and they are taken on a tour of the new town, including the construction sites, where completed houses, the industrial estate and the existing centre of Crawley are inspected. The visitors are accompanied by officials of the Corporation and have full opportunity for asking questions.

Back in London the firm ascertains which members of the staff wish to make a move, and a list of their names and addresses is sent to the corporation, who then arrange for their women housing managers to visit each family in their London home. The next official visit is " view-day," when a party of ten to twenty families is invited down and, in a nearly finished house, they meet representatives of gas and electricity undertakings, and of corporation staff ; they see the houses they are actually going to occupy, choose colour schemes, take measurements and sign the tenancy agreement. Every endeavour is made to give tenants the type of house they want, and it is often found that they are very willing to pay slightly higher rents to obtain the facilities they desire. This element of choice at Crawley—the provision of a larger garden, better fittings,



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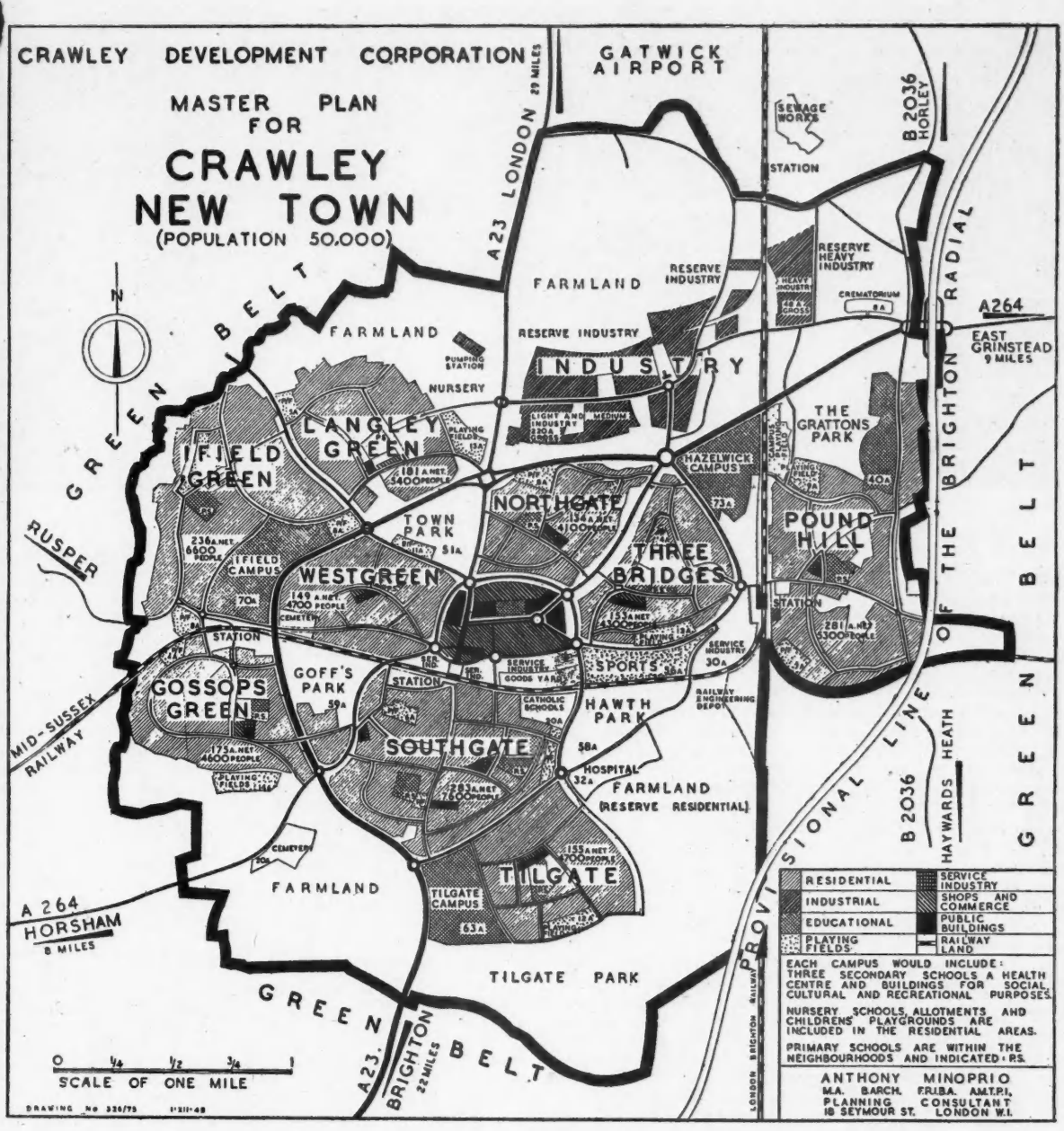


The master plan for Crawley New Town.

or a corner site—coupled to flexibility in rents, provides a welcome break in a country where rents have come in so many cases to have no connection with the realities of economics.

RESIDENTIAL DEVELOPMENT

Residential development was planned to begin near the old town centre; this has several advantages, and allows the earlier newcomers to make use of the existing shopping centre. The West Green residential neighbourhood, which already had a population of over 2,000, and adjoins the old town, was chosen for the first housing schemes, and is now the most advanced. Work is also well under way in the Northgate neighbourhood, which lies adjacent to the north of the old town, and between it and the new industrial site. Site development is now in progress at the Three Bridges neighbourhood, and detailed plans for Pound Hill and Langley Green are in course of preparation. Eventually each neighbourhood will have a small shopping centre of its own, but the shopping facilities in the old town are expected to be adequate to meet all needs for another two or three years.

Very little existing property is being demolished at Crawley, the Corporation sensibly taking the view that the country cannot afford that sort of thing at the present time. Some buildings will have to be removed when the time comes to extend the existing town centre to the east, where development is only one block deep, but in adding to this it is planned to retain the existing High Street, a policy that is in keeping with the Corporation's aim in promoting the natural growth of the town.

So far, all the houses completed have been subsidised dwellings designed both

Air view of factory area, showing standard factories.

by the Corporation's architects and by private architects commissioned by the Corporation. Variety has been achieved by the large number of types of house, about 50, that are being built; these ensure variety in detail, on a homely scale rather than in the grand manner, for the Corporation regard themselves first and foremost as builders of homes. The ordinary man, they believe, is more concerned to be able to pick out his individual house by some distinctive feature than in the rarefied æsthetic appeal of great façades constructed with vertical features. Further interest is created by the provision of a proportion of bungalows which are liked particularly by elderly people.

This "homely" approach appears already to be meeting with success, and an atmosphere of graciousness has been achieved for these low-cost homes with few rivals in the sphere of working-class housing. The break with the old type of uninspiring "council estate" environment is most marked, and if the construction of the New Town can be continued in the same manner Crawley may well find itself with many imitators.

Most of the front gardens are of the open type, to be maintained by the Corporation, but a number are enclosed by low brick walls, which are both pleasing in appearance and cheap to maintain. These features lend an air of spaciousness to this type of development, despite the fact that housing is at the relatively high level of 12 to the acre.

In addition to the subsidised houses, a number of semi-detached "intermediate" houses are now being built, of up to 1,500 ft. super, to be let at an economic rent to people of medium income. These have larger gardens, a garage (one of a pair between pairs of houses) and other additional features, and are built at a density of about 6 to the acre.

In the near future it is also proposed to build a small number of "managerial" type houses of up to 2,000 ft. super. to attract to the town, as part of the policy of obtaining a balanced community, the highest placed people in industry and the professions. It is worthy of note, and may be regarded as another symbol of the common-sense shown by the Corporation, that subsidised, intermediate and managerial houses are to be grouped separately within each residential neighbourhood.

Few flats are being built, as a survey carried out by the Corporation showed that only some 2 per cent. of the families in London who have been approached about living in the New Town desire this type of accommodation, and the Corporation are modest enough to believe that on such matters the customer knows best. In addition, the cost of flats is, of course, higher than that of houses. No blocks of flats have been designed of more than three storeys, and many of those going up now are three-storey blocks of the Swedish star type, an arrangement that allows of central services and additional light and air in the living-rooms.

The New Town is situated in the middle of a local brick industry, and full advantage has been taken of the charming Sussex bricks to add colour and warmth to the housing. The relatively high cost of some of these bricks is fortunately offset by the short hauls that their use entails. These bricks fit well into the aim of the Corporation's architects of producing attractive houses as economically as possible using traditional materials allied to modern methods of construction.

Allowing for the standard subsidy, the Corporation must charge economic rents for its dwellings as it has no income from rates to provide additional subsidy, as is practised by many local authorities. Thus with costs rising all the time rents have also to be raised; recent figures for the numerous types of standard house and flat gave figures varying from 17s. a week exclusive of rates for a one-bedroom one-living room flat or bungalow to 24s. exclusive for a two-bedroom one living-room terrace house, 27s. exclusive for a three-bedroom terrace house with living-room and dining-room, to 30s. exclusive for a four-bedroom terrace house with living and dining room. Rates and water rates payable by the tenants average 5s. 6d. a week for one-bedroom dwellings, 7s. for two-bedroom dwellings, and 9s. for three-bedroom dwellings. It is clear that this variety in types and rents is much appreciated by the London families seeking accommodation at Crawley.

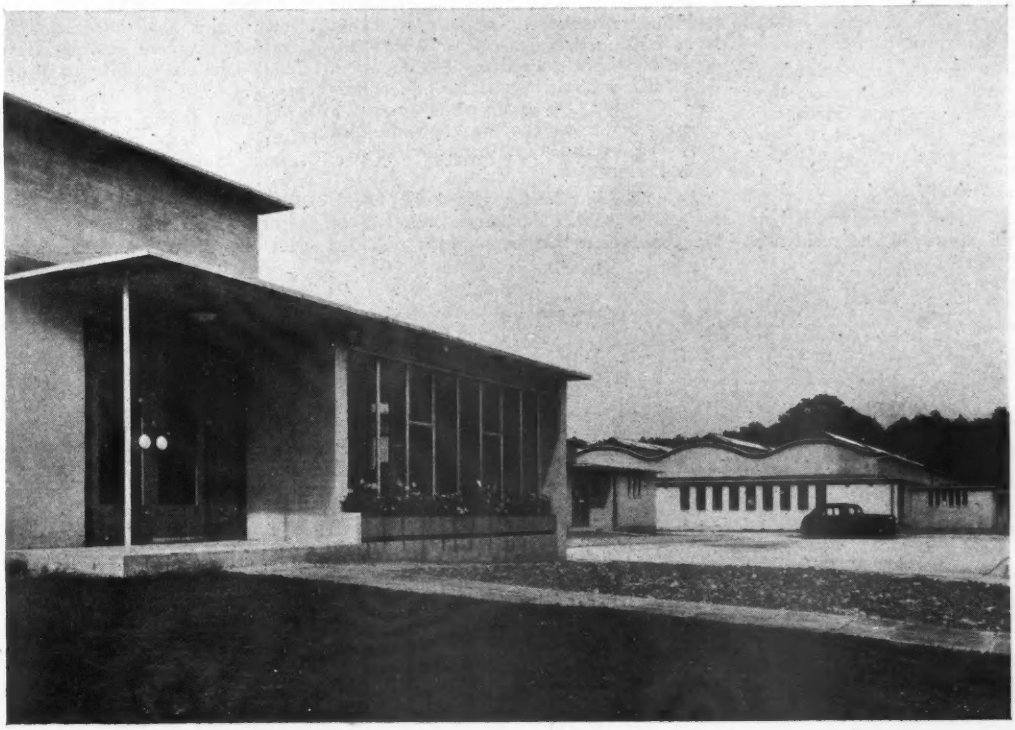
A plan for the siting of schools and a programme of school construction has been prepared in conjunction with the East and West Sussex County Councils. The contract for the construction of the first primary school was let in December last, and other schools are being started this year. A combined Technical and County College will eventually be built in the Town Centre.

THE INDUSTRIAL AREA

The siting of the Industrial Area fell naturally on the north-east of the New Town, near the projected main sewage disposal works, adjacent to the main railway line and conveniently situated for gas, water and electricity supplies, as well as lying away from the direction of the prevailing wind.

In addition to the 50 acres of the Industrial Area already opened up, the Corporation has prepared detailed plans for the laying out of a further 30 acres of factory sites, and progress is being made with the extension of roads and services.

3-bedroom terrace housing at Site 3, West Green.



View of standard factories, block A. In background is west elevation of block C.

Standard factories have been erected by the Corporation for the smaller firms, and the first five blocks of these factories comprising 79,000 sq. ft. have been let to twelve firms all of which are now in production, and a further 11,000 sq. ft. of similar factory space has been let and will be completed by late summer.

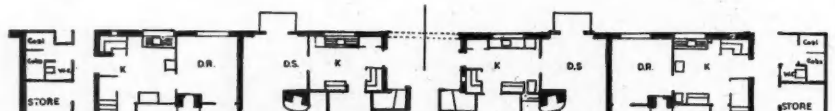
Five firms are in the process of, or hope shortly to begin, constructing their own factories, and the total investment of these firms in factories at Crawley is expected to amount to £1,500,000.

NEW ROADS

More than 5 miles of new roads have been laid in the industrial and residential areas now under development, and the opportunity has been taken to place all underground services at the side of the carriageway. In conjunction with the D.S.I.R.'s Road Research Section, and the county highway authority, an experimental length of prestressed concrete road has been laid in the Industrial Area [this experiment was described in detail in *The Builder* of February 16 last]. The pre-war Crawley By-pass, which takes a circular route to the west of the old town, will eventually be incorporated in a central ring-road.

A new joint water board has been formed with the Corporation as one of the constituent members which will not only serve the new Crawley, but 108 square miles of East Sussex in addition. A 1,200 million gallon impounding reservoir is under construction at Forest Row on the head waters of the River Medway. More than 5 miles of new water mains have been laid, and a pre-stressed concrete storage reservoir of 250,000 gallons capacity is completed and in use.

A new sewage treatment works has been designed and so sited that the sewage from two-thirds of the designated area will flow by gravitation, the remaining third having to be pumped at one stage; 5 miles of trunk sewer and 11 miles of subsidiary sewers have been laid.



GROUND FLOOR PLAN

FIRST FLOOR PLAN

WEST GREEN No. 2 HOUSING SITE. Above: General view. Right: Plans of terrace.

TERRACE HOUSES on Northgate Housing Site No. 1. Dwellings shown are of types M.3 and O.3, and plans are of M.3 type.

Arrangements have been made with the British Electricity Authority and the South Eastern Electricity Board for the necessary expansion of electricity supplies. Twenty miles of high pressure gas main has been laid by the South Eastern Gas Board from Croydon towards Crawley under a scheme for bringing to the New Town gas manufactured at Croydon.

British Railways have formulated plans for the removal of the existing sidings at Crawley to a new site on the main line to the eastern end of the Industrial Area. This will make room for the construction of a new passenger station in the centre of the town a little to the east of the present station.

The following is a list of the senior architectural staff of the Crawley Development Corporation : Chief Architect, A. G. Sheppard Fidler, M.A., B.Arch., F.R.I.B.A., A.M.T.P.I. ; Senior Architects, C. Stanley Brown, L.R.I.B.A., H. S. Howgrave - Graham, A.R.I.B.A., A.M.T.P.I., N. Foley, A.R.I.B.A., A.I.L.A. ; Architects, A. E. A. Dod, B.Arch., A.R.I.B.A., A.M.T.P.I., J. S. Hartley, A.R.I.B.A., A.M.T.P.I., G. W. Jepson, Dip.Arch. (Mancr.), A.R.I.B.A., and K. H. Saunders, A.R.B.A.

In addition the corporation has commissioned the following private architects to carry out housing schemes for them : Godman and Kay, FF.R.I.B.A., Johnson and Crabtree, FF.R.I.B.A., A. W. Kenyon, C.B.E., F.R.I.B.A., M.T.P.I., and Norman and Dawbarn, F.R.I.B.A.

The following is a list of the architects and main contractors for particular works at Crawley New Town.

Industrial Area.—Site development works (roads and sewers), Corporation's Chief Engineer and Chief Architect, Willment Bros., Ltd. (completed) ; ditto, Stage II, Holloway Bros. (London), Ltd. (proceeding) ; ditto, footways, H. Pannett, Ltd. (proceeding) ; Standard factories, Stage I, Corporation's Chief Architect, Holloway Bros. (London), Ltd. (four out of six blocks completed and in production ; remaining two blocks will be completed this summer).

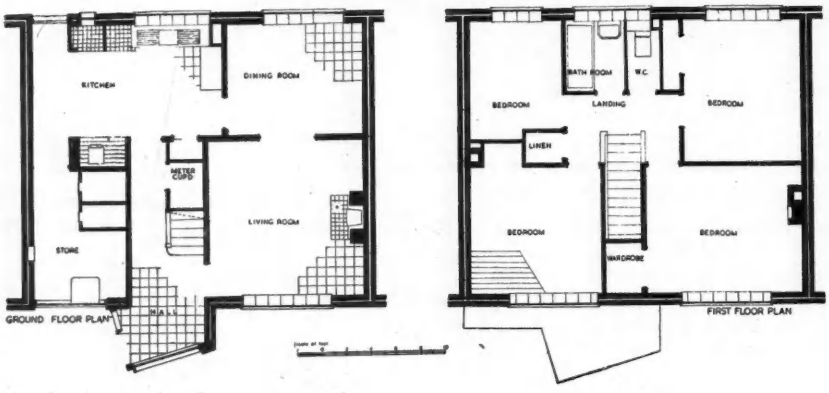
Of the factories being built by industrialists on sites in the Industrial Area leased from the Corporation, that for Messrs. W. C. Youngman, Ltd., built by James Longley and Co., Ltd., of Crawley, is completed and in production ; the factories for the A. P. V. Co., Ltd., and Messrs. F. H. Bourner and Co., Ltd., are now being built ; and those for Messrs. Young Randall and Co., and Vitamins, Ltd., are expected to be started very shortly.

West Green Neighbourhood.—Site development works, Corporation's Chief Engineer and Chief Architect, Turriff Construction Corporation, Ltd. (nearing completion) ; Site 1 (32 houses and four flats), Messrs. Godman and Kay, Hoad and Taylor, Ltd. (completed and occupied) ; Site 2 (105 houses, 19 garages), Corporation's Chief Architect, F. Bilton, Ltd. (71 houses completed and occupied) ; Site 3 (50 houses, 14 garages), Corporation's Chief Architect, Carlton Contractors, Ltd. (completed and occupied) ; Site 3b (96 " Star " and " L " flats, eight garages), Corporation's Chief Architect, Carlton Contractors, Ltd. (proceeding) ; Site 4a (37 houses, 22 garages), Corporation's Chief Architect, Carlton Contractors, Ltd. (10 houses completed and occupied) ; Site 4b (26 two-

NORTHGATE HOUSING ON THE No. 1 SITE.

Above : Two-bedroom M.2 type houses.

Right and below : View and plans of terrace of M.4 type 4-bedroom houses.



storey flats and three houses), Corporation's Chief Architect, Carlton Contractors, Ltd. (proceeding); Site 5 (170 houses, 30 garages), Messrs. Godman and Kay, Richard Costain, Ltd. (six houses completed and occupied); Site 6a (10 houses, 20 two-storey flats, 10 garages), Corporation's Chief Architect, Carlton Contractors, Ltd. (proceeding); Site 6c and 6d (30 intermediate houses, each with own garage), Corporation's Chief Architect, James Longley and Co., Ltd. (proceeding).

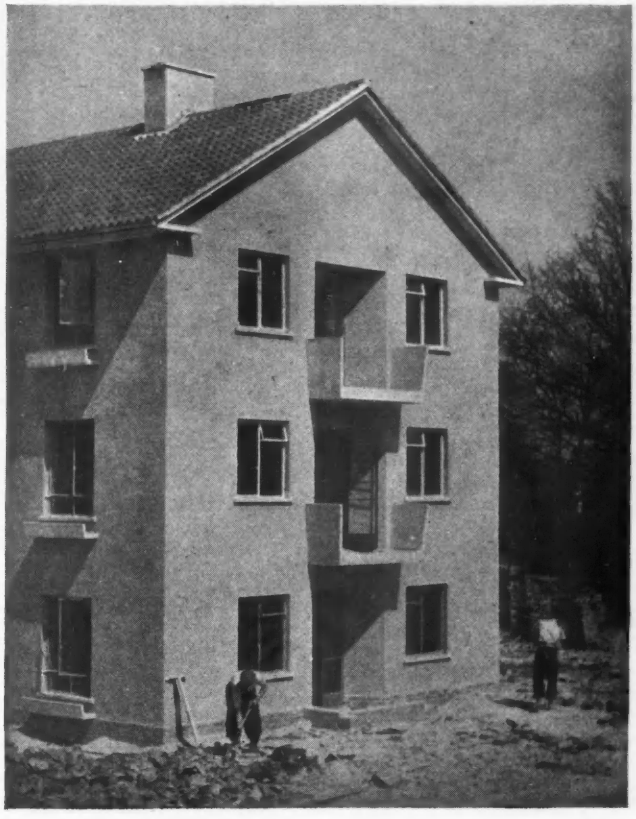
Northgate Neighbourhood.—Site development works, Stage I, Corporation's Chief Engineer and Chief Architect, Willment Bros., Ltd. (completed); footways for Stage I, Corporation's Chief Engineer and Chief Architect, H. Pannett, Ltd. (proceeding); Stage II, Corporation's Chief Engineer and Chief Architect, Holloway Bros. (London), Ltd. (proceeding); Site 1 (133 houses, 27 garages). Corporation's Chief Architect, Rice and Son, Ltd. (92 houses completed); Site 1a (72 flats, eight garages), Corporation's Chief Architect, Carlton Contractors, Ltd. (proceeding); Site 3a, 3b and 3c (30 houses, eight garages), Corporation's Chief Architect, Rice and Son, Ltd. (proceeding); Site 4 (116 houses, 39 garages), Messrs. Johnson and Crabtree, Carlton Contractors, Ltd. (proceeding).

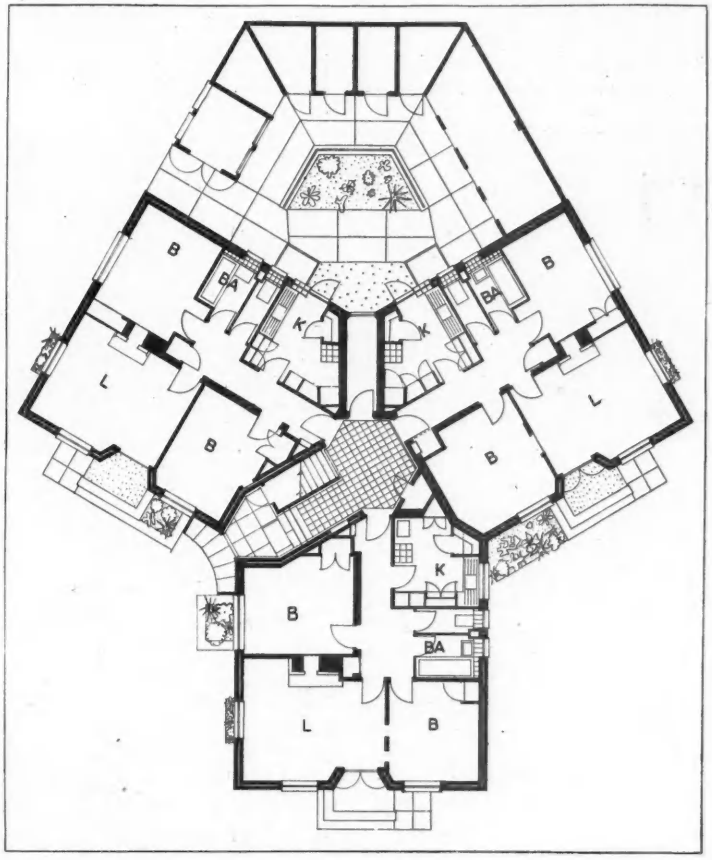
Three Bridges Neighbourhood.—Site development works, Stage I, Corporation's Chief Engineer and Chief Architect, Holloway Bros. (London), Ltd. (proceeding).

Sewerage and Drainage.—Corporation's Consulting Engineers (Messrs. John Taylor and Sons) in conjunction with Chief Engineer: Sewage treatment works, Stage I, Cementation Co., Ltd. (almost completed); first length of trunk sewer, Gilbert Ash, Ltd. (completed); second length of trunk sewer, Howard Farrow, Ltd. (completed); trunk sewer along the Crawley By-pass, Lavender, McMillan, Ltd. (completed); surface outfall sewer, Crawley By-pass, H. Pannett, Ltd. (completed); length of trunk sewer draining Northgate and Three Bridges, Holloway Bros. (London), Ltd. (proceeding).

Surface Water Drainage.—Corporation's Chief Engineer in conjunction with the Thames Conservancy: Crawley ditch improvement and London-road foul sewer, Willment Bros., Ltd. (proceeding); Polesfleet Brook improvement, Turriff Construction Corporation, Ltd. (proceeding).

Interim Water Supplies.—Pease Pottage Reservations in pre-stressed concrete (capacity, 250,000 gallons), Chief Engineer in conjunction with Pre-Load (Gt. Britain), Ltd.: Pre-Load (Gt. Britain), Ltd. (completed).



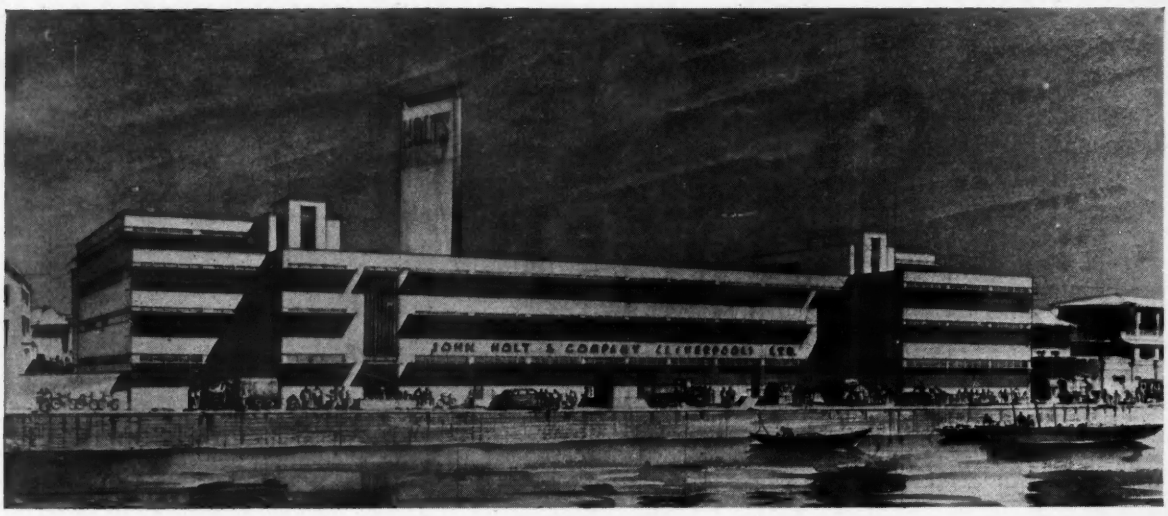


CRAWLEY NEW TOWN

"STAR" FLATS

Above: View of entrance front of these flats on West Green site.

Left: Ground-floor flat plans.



View from the Marina of the warehouses. *Below : The Broad-street aspect, with shops on ground floor and offices on upper floors.*

SHOPS AND WAREHOUSES FOR LAGOS, NIGERIA

RONALD WARD AND PARTNERS, F/ARIBA, ARCHITECTS

THE building for Messrs. John Holt and Co. (Liverpool), which is to be built in Lagos, Nigeria, is planned on a rectangular site measuring 316 ft. by 182 ft., with a central compound. The portion fronting the Marina (the lagoon) comprises the warehouses, as small boats can be moored alongside, while the portion facing Broad-street (one of the principal shopping centres) comprises shops on the ground floor and merchandise showrooms and offices on the upper floors. The colonnade to Broad-street is one of the features now required by the Lagos Executive Development Board as part of their town planning scheme. The tower (which will be lit by night) will not only be visible throughout Lagos Island, but by all ships approaching the island and the Apapa Docks.

The building is framed in reinforced concrete designed by Harvey B. Young, A.M.I.C.E., and the walls are of sand and cement blocks rendered finished in silver grey Snowcem. The windows are metal casements with louvred ventilators over the sun shields, and the roller shutters are of the jalousie type. Internally the walls are rendered and generally distempered. Joinery is in local mahogany.

The main contractors are Messrs. Costains (West Africa), Ltd.

The sub-contractors are as follows :—Windows, Crittall Manufacturing Co., Ltd. ; balustrading, Grundy Arnatt (Teddington), Ltd. ; sign, Pearce Signs, Ltd. ; plastic letters, The Lettering Centre ; lightning conductors, R. C. Cutting and Co., Ltd. ; ironmongery, Teuten and Co., Ltd. ; roller shutters, Haskins, Ltd.

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NEW TECHNIQUES IN BUILDING

Slow Progress Towards Greater Productivity

A REVIEW of the influence of mechanisation and prefabrication on techniques and cost of building was given by MR. R. FITZMAURICE, of the Building Research Station, at the Building Research Congress on September 12. The following extracts are taken from his remarks :—

It is often stated that the building industry is backward in adopting and applying modern industrial technique. In fact we can see that the general pattern of the industry has not changed in its essentials over a very long period of time. The industrial revolution which transformed so many other industries passed by the building industry and left it virtually unchanged. This state of affairs is not peculiar to the United Kingdom and the same criticisms are levelled at the building industry in other countries.

Can we say whether, in fact, the building industry is backward ? How can we measure its backwardness ? There are various criteria by which similar industries may be compared. Consumption of horse power per worker has been used ; expenditure in plant and equipment may be related with labour cost and this would be some measure of industrial efficiency. The simplest test and the one most worthwhile is merely to consider what is the trend of productivity with time. Are we today producing more building units per worker employed in the industry or fewer than we did 15 years ago ? Opinions may differ and arguments can rage but it is indisputable that productivity in the industry in the year 1950 was certainly no higher than it was 15 years ago or 15 years before that.

Let us contrast this with the public works side of the industry and we see a vast difference. Actual figures are hard to find but the facts stare one in the face. I had occasion to visit some of the Scottish hydro-electric sites last year and the impression on the dams, for instance, is of a small force of labour and a vast amount of machinery. Casting one's mind back to the 1920's, quite a small dam in Yorkshire had a navvy camp of 1,100 and the whole site teemed with humanity.

DEVELOPMENT OF NEW TECHNIQUES

What are the factors in the building industry which operate to prevent rapid developments in technique of the kind which are obvious in other industries ?

First, there is the lack of homogeneity in the industry. Let us consider the phases of activity which go to the making of any complex product. They are design, regulation of cost and prices, manufacture of materials, production and assembly of components, and marketing of the product. It is perhaps trite to say it, but it must be emphasised that all these phases of activity are inter-related and must be closely co-ordinated if there is to be any hope of progress. Equally, no one of them is more important than the others and none should be allowed to dominate the others. As it is, in the building industry these phases of activity are split up and compartmented to such an extent that efficient co-ordination is quite impossible. It is believed that there are signs of a realisation of the inefficiency of the present structure of the industry, with its lack of homogeneity, and this has resulted in the formation of large industrial organisations who are assuming all the functions under one roof. Design, cost control, obtaining of materials, manufacture of components and their assembly, have been carried out under a single direction. This kind of organisation springs from the need to provide for particularly difficult kinds of work such as major industrial developments in undeveloped areas. Time will show whether this is to be the pattern for building in the future, but it certainly seems to be a reasonable and probable solution.

Second, there is the conception of a building as a work of art and as a manifestation of craftsmanship. Those characteristics have a strong emotional appeal, but, like a lot of other things, they have to be considered in the light of all the factors existing in a country at a particular time. We have to ask ourselves whether there is any hope of creating the " work of art " quickly or cheaply, and there does not seem to be any indication at present that we can do so.

Third, and closely linked with the foregoing factors, is the standard of technological education in the industry. Here again, there is a marked contrast between the building and public works side of the industry. On the public works side the designers and contractors alike are amply staffed by men with honours degrees in technology.

TECHNOLOGICAL EDUCATION

On the purely building side, however, the picture is very different. Architectural education in most countries places the main emphasis on aesthetic studies, followed by a somewhat abstract treatment of planning, with building technology bringing up the rear, but a long way behind. The educational standard of entry into the architectural profession in the United Kingdom is such that there is no compulsion on the student to be grounded in the elements of the natural sciences which alone provide a sound basis for technological studies. The case of the contractor is even worse. There is no generally applied standard of entry into the industry and only the most perfunctory attempts have been made to set any standard of technological education for the aspirants to managerial status, and certainly nothing approaching the high professional status which has come to be regarded as essential for the public works contractor. This being the case, it is hardly surprising to find there is no recognised forum for the exchange of ideas on technological development in the building industry and, considering the magnitude and importance of the industry, there is a regrettable paucity of ideas to exchange.

The man who introduces an innovation into an industry has to devote to it a great deal of his energy for a long time. To succeed he must have something of the fervour of a missionary. In addition, however, he has to spend a lot of good, hard cash in the necessary trials and experiments to prove his ideas. It is unfortunate, to say the least, that there is often an element of doubt whether the device which he has proved to his own satisfaction will be permitted under the more rigid codes of building.

There is also the difficult problem of governmental control. When the demand for buildings far exceeds the supply of material and labour available it may be necessary to impose some system of priorities. As in the case of building regulations, it is much more easy from the administrative point of view to deal with cases which fall into the stereotyped pattern. Thus the man who interjects an innovation in technique into a project must face the strong possibility that his project will be delayed whilst the innovation is weighed in the official balance. Even at the best, there is inevitably a delay and an element of uncertainty as to the outcome. In consequence, this is a very strong deterrent to developments in building technique.

INTRODUCTION OF IMPROVED TECHNIQUES

In some of the newer industries, technical developments follow rapidly from the results of research. In the building industry the tendency is for research to be conducted by organisations outside the bounds of the industry and, inevitably, staffed in the main by technologists with entirely different training and experience.

The research organisation has a major task to perform in developing the research method for separating the effects of the various operative factors and for measuring them. Unless, however, the industry is prepared itself to make use of the methods when developed, and to carry out its own researches as a matter of course, progress is going to be slow and intermittent. There is always opposition and inertia to moves of this sort ; and this was well exemplified during the war by the initial resistance to the use of operational research methods. Fortunately, however, there are always people with the necessary vision and initiative who, once they are seized with the basic idea, will give the new method a trial.

To make successful use of a new process it is nearly always necessary to make the appropriate changes in site or workshop organisation. In a traditional industry the organisational pattern tends to be very stable, and there are many supervisors who are incapable of appreciating the nature of the changes in organisation which may be necessary to adopt an innovation, and even with the best will in the world they cannot depart from the methods of a lifetime.

These considerations lead one to the conclusion that an ancient industry, rooted in traditional and craft practices, cannot accept changes in technique rapidly.

INTERNATIONAL WELDING CONGRESS

Prestressing Metal Construction

A CRISIS now being experienced in the theory of construction of metal bridges was referred to by PROFESSOR IR. W. SOETE, of the University of Ghent, when he read a paper on the "Possibilities of the Prestressing of Metallic Constructions" at the International Welding Congress, held at Oxford recently. He said:—

"We are not competent to judge whether the crisis is of European significance or only characteristic of certain countries. Be that as it may, it is being experienced in Belgium and is not confined to welded bridges and structures but is also felt in riveted work."

This showed, he thought, that the present situation was not the result of accidents which had occurred in certain welded constructions, but was rather the consequence of the appearance of new materials, among which prestressed concrete was certainly the first offender. He continued:—

If steel is to recover its position as the material for bridges and frames, the price of metal constructions must be reduced. Since the materials are an important factor in the cost price, the engineer is faced with the urgent task of lightening the structure. The classic and obvious solutions suggested in many countries consist either in increasing admissible stresses or in using stronger steels. But the effect of both these solutions is to reduce safety; the first requires more exact calculations from the design office, which is often impossible; the second confronts the welder with serious difficulties. The problem, therefore, requires examination in its entirety. Unfortunately, such a revolution in an old and tried technique is extremely difficult and progress will only be slowly achieved. This situation constitutes a serious handicap which is not experienced by younger techniques such as prestressed concrete, in which any young research worker is free to suggest a new idea without running counter to good principles hallowed by experience.

Notwithstanding this situation, good work has already been done, and I am glad to pay tribute here to Professor Baker and his team who for the past 15 years have been trying to renovate metallic construction by exploiting the plasticity of mild steel. We on the Continent often characterise our hosts as "conservative," but this is certainly not true as far as technical matters are concerned, and I here express the wish that the theory of "Plastic Design" may by way of our laboratories soon become current in European metallic construction.

We certainly have no intention of making so bold as to propose another theory beside that of Professor Baker; but, given the obvious success of prestressed concrete, many constructors have wondered if it would not be possible to apply a similar solution to metallic construction in Belgium. Professor Magnel, of the University of Ghent, a specialist in prestressed concrete, has given lectures on metallic precompressed construction; two of these lectures have been published in *Ossature Métallique*.

Not being a constructor, I am not competent to judge if certain solutions possible in theory are economically practicable. The aim of the present paper is to try to make a synthesis of the possibilities of the prestressing of metallic constructions. Some solutions have been tested in laboratories, others not. Tests and criticisms will therefore be necessary to discover the right method. We hope that many of both will be made and that an economical solution will be found.

References and Prestressing

At first sight the idea of prestressing steel seems extremely attractive. Steel is, in fact, a material with excellent properties both as regards tension and compression. From existing evidence everything seems to suggest that, in the case of a member stressed to bending, a start should be made with a member already stressed so as to shift the origin of the stresses created by the load. This idea is very old and has been applied in many constructions.

But before allowing ourselves to be carried away by obvious solutions, let us examine the object of prestressing, which is to increase the zone of admissible stresses by widening the sphere of the criterium of reference. But what reference? In metal constructions it depends on the nature of the job, the method of calculation also. It is, for example: The limit of elasticity in the classic method of calculation; fracture for jobs undergoing fatigue stresses; instability in the method of calculation proposed by Professor Baker, etc.

Now prestressing only affects some of these criteria. The application of prestressing, for example, and the exploitation of plasticity, are, according to Professor Baker, impossible; it may thus happen, as the Professor has shown, that collapse through instability may occur independently of the state of initial stressing.

Residual stresses arising, for example, from welding do not influence the appearance of the criterium of plastification, according to Professor Baker. Prestressing will, therefore, have no effect, either good or bad, if plasticity is accepted. On the other hand, if the construction is calculated according to the classic method, in which the admissible tension is a fraction of the elastic limit, any technique which enables plastification to be delayed will allow some lightening of the construction.

From these considerations it may be concluded that the choice of the criterium of reference has its effect upon the possibility of prestressing, a technique only useful when the criterium is the limit of elasticity.

The prestressing of a construction can, in principle, be carried out following two different methods:—

By the application of a force exterior to the element to be prestressed. The stresses thus brought about should be opposite in sign to those introduced by service loading. The stresses created are therefore in equilibrium with the external forces, and, if it is desired to maintain this state of affairs, the external forces must be embodied in the construction.

By introducing into the element to be treated a system of stresses already in equilibrium without the intervention of external forces. These distributions of stresses can be grouped into two classes according as to whether the stresses in the extreme fibres have not the same sign.

Equilibrium Under External Forces

If a beam is to be prestressed by means of external force, it must be placed in a closed frame in which the force required for prestressing the beam can be created by means of screw-jacks, nuts, stretchers or other mechanical devices. The entire frame can be an integral part of the structure, as is particularly the case with stringers, cable systems, etc. If this is not the case the stressed beam must be taken from the frame, when the component which will take up the strain of the frame has been applied to the beam.

This is what happens in beams stressed in a rigid frame, or two beams stressed against each other. (Fig. 1.)

In both methods the construction is completed by a component which should take up the stress of the deformed beam. In principle, two solutions are possible, according to whether a component is employed which is highly resistant to tension or to compression.

The difficulty of the method exists in the fact that in the component taking up the prestress, the stresses arising from the superimposed load have the same sign as those caused by prestress. This component at the start is therefore in an unfavourable condition. In order to prevent failure of the work resulting from the destruction of this component, its section must be large enough to permit stresses to remain low, or it must be designed in such a way that its elastic limit is higher than that of the remaining part of the structure.

The solution, which consists in taking up the strain by a component of high tensile resistance, is the older one (Fig. 2). Many works made of cast iron have been made lighter by using steel stringers. A more recent solution has been put forward by Professor Magnel who, by using sandwich cables employed in prestressed concrete, has succeeded in decreasing the weight of mild steel constructions. The elastic limit of these cables is of the order of 120 kg/mm², a size which allows of a decrease in weight with a stringer of relatively small section. The lower the elastic limit, the greater the section of the stringer must be, and consequently the smaller the decrease in weight obtained. The difficulty in the use of this technique exists in the attachment of the stringer to the deformed material.

One may consider whether welding could not present a simple solution. For the stringer, it would be necessary to use weldable steel, i.e., the use of components with very high elastic limit is excluded in practice because of weldability. It would, however, be interesting to study what can be achieved by a solution consisting, for instance, in welding to the extremities of the prestressed member of the beam a steel flange with the highest elastic limit compatible with weldability. The formulae laid down by Professor Magnel allow of the study of this problem.

The second solution, consisting in taking up the exterior strain by a component resistant to compression, is certainly of equal interest (Fig. 3). The material indicated is concrete. One thus arrives at the conception of composite concrete-steel structures which, in our opinion, offer considerable advantages. The method consists in first

deforming the beam and then enclosing the drawn member in a certain amount of concrete. Once the concrete hardens, the beam is freed from external forces, which are partly taken up by the concrete. As the superimposed load will increase the compression of the concrete, the concrete section must be dimensioned in such a way as not to exceed the tension limit. As this section will usually be employed as a slab, here is an attractive solution of the problem of taking up the prestress. As elastic limit is not involved in concrete, the fracture of concrete in compression must be taken as a term of reference and the same coefficient of safety must be applied to this resistance as is applied to steel with regard to the elastic limit. As Professor Torroja has brilliantly proved, the alliance of concrete with steel has only been made possible through welding. It is, indeed, necessary to take up the considerable shear forces existing in the plane of contact of concrete and steel. This is easily accomplished by the welding of thrust-bearing blocks or anchors on the compressed member.

It is to be noted that, thanks to the great rigidity of the concrete, this technique eliminates the difficulties inherent in metallic construction, such as the buckling of the flange or of the web, or the warping of the beam.

It is obvious that the simultaneous use of a component taking up the compression and of a component taking up the tension is possible (Fig. 4). It is even probable that this latter solution is the best, since the steel component plays the role of the stringer and the concrete succeeds above all in giving the whole the necessary stability.

Systems in Internal Equilibrium

The unsymmetrical distribution is certainly the most attractive, since it achieves a direct prestressing of the unit subjected to bending. Unfortunately, there are difficulties. We have attempted to establish it by two different methods:—

1.—A plate flange and a half-web of the beam were heated by means of blowpipes, having between the two heated zones a half-web cooled by a jet of water, the second flange being also kept cold. Heating resulted in expansion of the heated parts, an expansion which was impeded by the cold parts; this resulted in a plastic upsetting which at the time of cooling gave rise to tensile stresses in the heated zones, and to compression stresses in the cold zones. The equilibrium of the residual stresses thus created should result in the appearance in the beam of a configuration of stresses similar to that in Fig. 5. Unfortunately, the conditions of equilibrium of rotation demand that the stresses in the web are in equilibrium with the stresses in the frame, and as the lever arm of the force in the frames is greater than that of the resultant of the stresses of the web, the tensions in the flanges must be small, i.e., the prestressing will be slight.

2.—Here we have superimposed two beams in which symmetrical configurations have been introduced (see Fig. 6), one showing at its extreme fibres compression, the other tension. By welding at their free ends the two units, a disymmetrical distribution is achieved. We are afraid, however, that this method is only of purely theoretical interest, since the added cost would not justify the gain achieved by allowing higher stresses.

On the other hand, the symmetrical distribution (Fig. 6) allows of high stresses in the flanges, stresses which depend also on the dimensions of the web in relation to those of the two flanges. In principle, symmetrical distributions can be reduced to the two following configurations: (1) The interior fibres are subjected to tensile stresses: the web should, therefore, be the seat of compression stresses (Fig 7). (2) The interior fibres are subjected to compression stresses: the web should, therefore, be the seat of tensile stresses (Fig. 8).

How are these states of tension to be introduced into a beam with a plain web? The method we have employed, one which gives satisfactory results, is based on the working out of the temperature gradient.

To obtain the configuration with tensile stresses (Fig 6b) in the exterior fibres, one of the following methods can be used:—

(i).—Heating by means of oxyacetylene blowpipes the two flanges of the beam, whilst subjecting the web for example to a jet of cold water. This operation can be carried out in sections. At the time of heating, the flanges have a tendency to expand, this deformation is, however, impeded by the web, which remains cold; the result is that the flanges undergo plastic deformation; when they shrink whilst being quenched, the deformation is once more impeded by the web, from which arises the appearance of tensile stresses in the flanges and of compression stresses in the web. If the heat treatment is carried out symmetrically and simultaneously, for instance by two operators, no visible deformation occurs, the beam remaining absolutely straight.

(ii).—Heating by means of a blowpipe one flange of the beam whilst keeping the other cold. As this treatment has no regard to symmetry, the equilibrium of shrinkage stresses is not achieved, and the result is that the unit will be deformed by creating a new distribution of stresses which will now be in equilibrium. The beam, however, will no longer be straight and will be the seat of tensile stresses not only in the concaves heated flanges but also in the convex flange maintained cold.

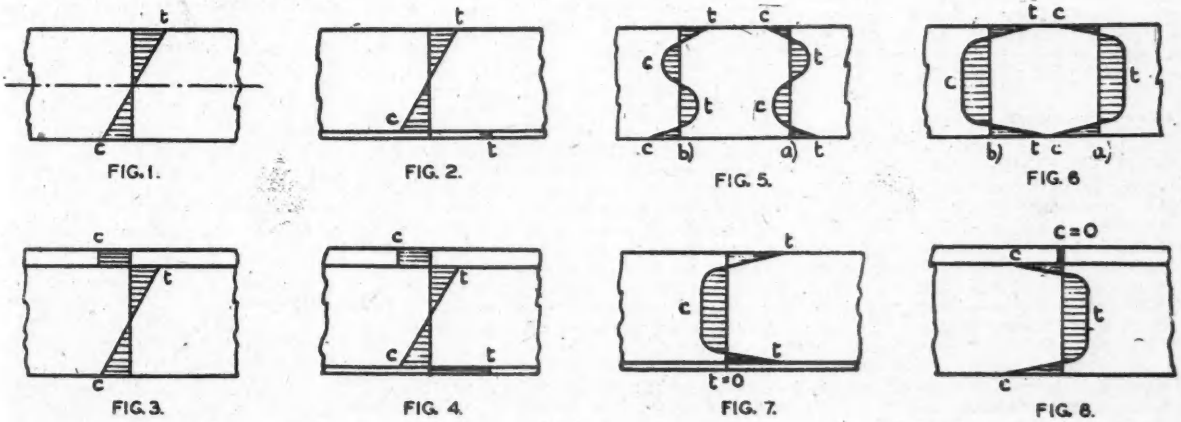
In order to achieve the configuration of Fig. 6a with compression in top and bottom fibres, the following method may be adopted:—

1.—Use the inverse procedure of the first method described above, i.e., heat both faces of the web by two blowpipes and cool the flanges. Because of symmetry, no deformation of the whole is visible.

2.—Use on one of the flanges a technique similar to that of surface hardening, i.e., apply a high degree of heat to a flange and cool it immediately by a jet of water This is a simpler method of heating the web, which retains the heat for a longer period of time; when it gets cool the flanges are already cold and they impede the shrinkage of the web, thus giving rise to tensile stresses in the web and compression stresses in the flanges. In the parts subjected to superficial hardening the compression stresses in the surface treated are produced in the same way. This method, which is perhaps simpler, because it can be carried out by a single operator, incurs the risk of deformation of the whole structure and of a less interesting distribution of stresses than when two operators work in conjunction.

For parts subjected to bending the symmetrical configuration offers a distribution of little interest; in bending, one fibre will be subjected to tensile stress and the other to compression stresses; as the prestressing of the two end fibres has the same sign, one of the fibres will always be prestressed the wrong way. Hence the eventual advantage will be highly problematical. The thing to do, therefore, is to strengthen the fibres prestressed disadvantageously. This strengthening can be carried out by the application of one of the techniques described for external forces applied to parts prestressed by mechanical devices.

Let us take, for example, the case of a beam, the web of which has been heated,



Diagrams used by Professor Soete to illustrate the stresses in a beam under varying sets of conditions.

thus introducing compression stresses into the flanges. If the part thus treated is subjected to bending, the stretched fibres will be prestressed the right way, but this is not the case with compressed fibres. The strengthening of these can be achieved by using concrete. It is therefore necessary to begin by welding the thrust-bearing blocks or anchors on the flange to be compressed. When this is done, heat treatment is applied to the web, after which the concreting of the flange plate is carried out. All these operations are made on a completely free beam.

A similar technique can be adopted if the flanges are the seat of tensile stresses. In this case heat treatment is first applied to these flanges and the stringer is attached to the beam free from all external force. If the stringer is attached by welding, there is the risk, however, of destroying the state of stress introduced by the heat treatment, at least in the immediate vicinity of the weld.

Professor Soete concluded by saying that these general considerations were ideas conceived in laboratories. They had not been carried out in practice. However, tests had been made in the laboratory, he said, and these would be communicated.

THE SOUTH BANK SCHEME

Mr. John Ratcliff's Talk to the A.B.T.

LONDON branch of the Association of Building Technicians held a meeting at Westminster on September 7, at which Mr. JOHN RATCLIFF, A.A.Dipl., A.R.I.B.A., A.M.T.P.I., co-ordinating architect for the Festival of Britain, delivered an address on the South Bank Scheme. Mr. T. M. McLaren presided and introduced the lecturer to his audience.

Mr. Ratcliff said the site had been thought of in connection with the exhibition of 1851, and its choice on the present occasion had been justified by experience, whilst Wembley and Lansbury had suffered through not being so readily accessible. The area of the South Bank Scheme was only 27 acres, and it was estimated that 50,000 people would crowd the exhibition. A first task of those promoting the scheme had been to persuade the Ministry of Works to postpone the erection of certain large Government offices which were ultimately to occupy part of the site. Another task was that of finding alternative accommodation for certain tenants under Hungerford Bridge. There an uncloseable right of way had been raised to the same level as the high-level bridge, and it was to be hoped this change would remain because it freed the land below.

The theme of the exhibition was the British contribution to civilisation as a result of the initiative of the people and the resources of the land—this theme being unfolded against the background presented by the living, working world of to-day. As to locality, the original idea had been to connect with Northumberland-avenue a great deal more than was actually done, but there was the Bailey bridge providing a physical and visual link with Trafalgar-square. The smallness of the site made the grand manner impossible, but it was decided that the central object should be a saucer dome, the largest in the world.

Architects' Opportunity

Alternative policies were possible for the design of the buildings. One was that previously designed prefabricated structures should be adapted. Another was to lay down one or more modular systems of construction which architects could follow. A third was to brief architects carefully with the requirements, name a sum of money which they must not exceed and leave them to work out their own designs. This was what was generally done, but some of the work was given to public competition. It was decided that no architect should receive more than one commission, and an effort was made to employ architects who were as yet but little known.

Asking why the structures were so permanent, Mr. Ratcliff replied to his own question by saying that, first of all, it was because of public safety. Certain things had been done which would not be permitted by normal controls, but only after careful consideration, and, if anything, standards had generally been more rigid than those of the L.C.C. Another reason for stability was that buildings started in the middle of 1949 must withstand two winters before they were opened near the middle of 1951. There would have been no very great advantage in cost or organisation if temporary or semi-permanent structures had been chosen.

He did not think any revolutionary new structural ideas had been used. Construction was mainly in steel. In one case a steel frame had been covered with canvas, but canvas was not a suitable material for such a site. It presented problems of treatment and became very dirty. It gave more trouble than any other material. Generally speaking, the co-ordinating committee had been fortunate so far as concerned materials in that they obtained their steel and aluminium after de-rationing and before the demand for defence.

Future of the Site

In reply to questions as to what would happen to the site when the exhibition was finished, Mr. Ratcliff said the foundation stone of the Royal National Theatre had been laid, and it was rumoured that an hotel would be sponsored by the London County Council. These would be downstream from Hungerford bridge; on the upstream side there would be blocks of Government offices.

Asked whether there had been an actual running check on cost, Mr. Ratcliff said that in some cases buildings had cost less than estimated but in other cases this had not happened. The job had been a rush one and all that could be done was to prepare an estimate of costs and check this from time to time. Checking had resulted in many things being sacrificed in order to maintain others which had already been resolved upon. As to buildings, there was a formal contract and schedule of prices, and the architect was expected to write an outline specification. There was not the slightest possibility of the exhibition resulting in a profit. It had never been intended there should be a profit.

Another question was asked as to contact with contractors: was this on price or ability?

Mr. Ratcliff replied that the committee had to be realistic about contractors. By the time the committee was ready to make selection Costain's and Cubitt's were already in operation, and to pull in outside contractors at that stage would have been to invite suicide so far as organisation was concerned. But although the main contractors were selected on a non-competitive basis, all subcontractors were selected by tender and their work had formed a large proportion of the total value.

A question was asked whether the financial aspect had had a bad effect on design.

Mr. Ratcliff said it was hard to answer this. He did not think it had, but in the later stage certain things had to be sacrificed.

Asked whether an attempt was made to bring architect and designer together where the architect was designing a frame, and the designer putting the display in, Mr. Ratcliff said there had been a good deal of collaboration.

Another question was whether there was any form of co-operation between planners, architects, contractors and others on the operating side in the form of a working committee.

Mr. Ratcliff replied that thought had been given to the workers on the job, by Cubitt's particularly. The workers had shop stewards. Very great efforts were made to bring the workers into the picture, and he thought it safe to say those efforts were well rewarded. The workmen were keen to do a good job and to do it to time.

Another question was: "Is there any possibility of the technical drawings being made publicly accessible?"

Mr. Ratcliff replied that in the course of time he thought the drawings would find their way to the Public Records Office. There were hundreds of such drawings.

As to selling parts of the buildings, Mr. Ratcliff said the committee were selling what they could. The question of whether any of the buildings should be retained for permanent use was under discussion.

A vote of thanks was passed to Mr. Ratcliff.

R.I.B.A. CRICKET CLUB

A "Reasonably Successful" Season

THE R.I.B.A. Cricket Club have enjoyed a reasonably successful season, having played five matches, of which they won two and lost three. In the case of the games lost against Blue Circle and the R.I.C.S., however, they were very close results.

The closing fixture of the season against the Club Cricket Conference was a particularly enjoyable game and although the result looks to be an overwhelming defeat, this is not quite the case, and particular credit is due to the R.I.B.A. bowlers, who maintained a constant attack, as the Conference side scored their 201 runs in 65 overs.

The club membership has increased, but new members are always welcomed. It is hoped to hold the club dinner at the end of the year or early 1952, and those interested should apply to Mr. R. R. Fairbairn, 81, Piccadilly, W.1.

RESULTS

v. *Blue Circle C.C.* (*on A.A. Ground*), *June* 3
R.I.B.A. 49 — Blue Circle 50 for 7
Lost by 3 wkts.

v. *A.A.* (*A.A. Ground*) *June* 27
R.I.B.A. 66 for 3 — A.A. 61
Won by 7 wkts.

v. *The Vitruvians* (*A.A. Ground*), *July* 18
R.I.B.A. 187 for 8 decl. — The Vitruvians 180
Won by 7 runs.

v. *R.I.C.S.* (*College of Estate Management Ground, Hinchley Wood*), *August* 1
R.I.B.A. 66 and 88 for 9 decl. — R.I.C.S. 79 and 76 (2)
Lost by 8 wkts. (2 innings match)

v. *Club Cricket Conference* (*Guildford*) *August* 23
C.C.C. 201 for 4 decl. — R.I.B.A. 118
Lost by 83 runs

SOIL CEMENT CONSTRUCTION

War Department Investigations

By CAPT. J. H. F. FOSTER

SINCE the end of the war there has been considerable knowledge gained in the use of stabilised earth block construction through work carried out in East and West Africa. In particular, the work of the Overseas Food Corporation in this field has been followed with great interest, and friendly liaison has been maintained with their engineers, mainly Major Chadwick and Colonel De'Ath. During an informal conference in 1948 concerning development of suitable blockmaking plant, it was stated that W.D. efforts would be directed to large-scale mechanical production of bricks and blocks rather than in further work on improving hand-operated plant.

In January, 1949, there appeared to be a specific commitment in North Africa for which soil stabilised construction was, in principle, the only practical course. In considering the available brick- and block-making plant it was finally decided that, owing to the high compaction pressures required in this process, the normal brick size was the optimum-sized building unit.

SCOPE OF EXPERIMENTS

The brickmaking plant finally selected to carry out experimental brick production was a rotary brickmaking press, with a paddle mixer as used for making the silica refractory bricks made by Herbert Alexander, Ltd. Samples of soil from North Africa were obtained for examination by the Building Research Station, who reported that the material was suited to stabilised soil construction, and that briquettes had been made under laboratory conditions.

In view of the small amount of earth available it was decided to consult an eminent geologist with experience in North Africa and ask him to match the North African material with bulk supplies of identical material obtained in this country. Mr. Shotton, the then geologist of Sheffield University, kindly helped and several tons of matched material were delivered to a brickworks at Sheffield.

Soil Characteristics.—A brief description of the soil characteristics was 14 per cent. fine clay, remainder of clay being sandy silt. The grading by B.S. sieves was:—

Sieve No.	16	30	60	200	−200
Percentage retained	0	2	6	54	38

=Total 100 per cent.

Initial trials were extremely promising, and over a series of week-ends to avoid interfering with normal production, tests were carried out to determine the optimum compaction pressure, moisture content and economic cement mixture. The trials were unfortunately held up on account of sickness from September to December, 1949. However, in January, 1950, in reviewing the progress made, it was decided to make a full-scale production run. This was carried out in Sheffield with two observers present, one from the W.D. and one from the Cement and Concrete Association. The bricks were produced with a moisture content of 11.5 per cent., a compaction pressure of about 4,000 lb. per square inch and a cement content of five per cent. After pressing, the bricks were removed on flat-topped trolleys and stacked for natural curing. No attempt was made to moisten the bricks, as the chemist in charge of the works was of the opinion that no evaporation could take place due to the humid conditions.

After three weeks the bricks were transported by road vehicles from Sheffield to the Building Research Station, Garston, Watford, with insignificant breakage. For example, in one lorry load only two bricks were broken. As the bricks were air cured, and went without additional wetting (contrary to the orders of the engineer coordinating the work), and were transported without loss over 150 miles, it can be said that conditions which might obtain in practice were simulated. In the test carried out by the Building Research Station, bricks were repeatedly soaked and dried, and were found to show increased strength, and no expansion occurred.

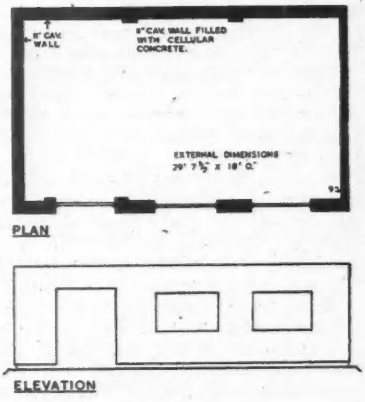
THE EXPERIMENTAL BUILDING

The experimental building shown in the accompanying illustrations was erected at the B.R.S. The supervising engineer was Col. J. L. Lishman, research and development engineer to Messrs. Taylor Woodrow, Ltd., in consultation with the War Office engineer in charge of the whole scheme. The mortar used was similar in character to the material used for producing the bricks. The building, 30 ft. by 18 ft., was erected under entirely normal conditions such as obtained on any building site in this country, and the work proceeded without any precautions other than covering the top of the walls at the end of the day.

The weather during erection included frost, snow, sleet and rain. After completion of the brickwork the building was left open and unprotected for over a month, waiting for delivery of the roof, and the brick shell was fully exposed in conditions much more severe than those which obtain in any tropical or sub-tropical climate.

Description of Building.—The side walls and one end wall are normal 11-in. cavity construction and the other end wall 9-in. solid. The joints were left flush as the work proceeded, except for one panel on the 9-in face, which was weather-pointed. The side walls were finished with a concrete coping 4 in. thick. The building was eventually roofed with a factory-produced sectional steel roof, designed for housing in the U.K., and not primarily meant for overseas.

Surface Finishes.—A series of surface finishes was applied in panels round the building, omitting some areas for prolonged weathering tests to the unprotected bricks. Briefly, the front of the building was finished off with two coats of white cement paint and one panel in the rear was limewashed (lime



Experimental building. Front elevation.

Side elevation showing various external finishes.

and tallow). Of the finishes used, these two normal techniques seemed particularly suitable and economic.

Messrs. Wingets have now under production a mechanically operated press, specially designed for producing soil-cement blocks. Messrs. Herbert Alexander in further W.O. trials have produced soil-cement bricks with a crushing strength of 2,000 to 2,600 lb. per sq. in. after natural curing for three weeks. Speed of production was 1,100 to 1,200 per hour, cement content five per cent., moisture content eight and a quarter per cent., final compaction pressure 6,000 lb. per sq. in.

With cement at £7 per ton, the cost of brick production has been estimated by three independent authorities at £2 to £2 15s. per 1,000.

FUTURE PROSPECTS

Technical experience gained (during erection of the experimental structure) shows that a satisfactory structure may be built using suitable soil bricks stabilised with a five per cent. cement addition. At the moment samples of soil from a specific site are being examined. An outline of the steps which it is proposed should be taken is as follows: (a) Matching the samples of earth from a specific location overseas with bulk material obtained in this country; (b) Trial brick production followed by a full-scale trial production run; (c) Tests of the bricks; (d) More detailed proving of deposit of suitable material at the site overseas; (e) At such a location a pilot plant should be erected, and when the pilot plant is ready for operation, arrangements for adequate supervision of the initial trials will have to be made; (f) It is then foreseen that simple technical production specification and directions will be evolved for the material obtaining at the site, so that the plant can continue in full normal production on a basis of sound mechanics practice.

It is considered that full-scale field trials overseas will show that soil-cement bricks and blocks can provide a useful source of building material, particularly in undeveloped areas where cement, aggregates, fuel and water are scarce or costly.

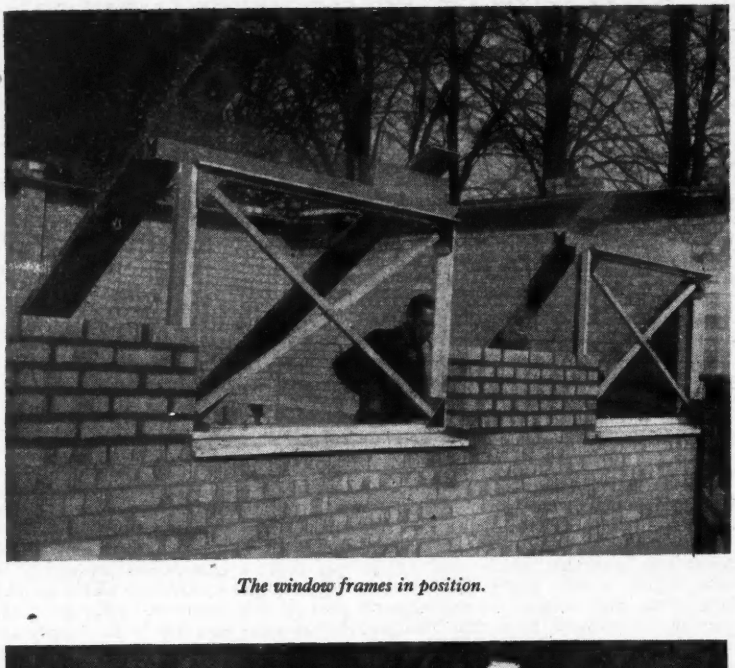
To avoid any impression that soil-cement is considered to be a panacea, it should be noted that the technique is one of several under development fulfilling the general requirement for practical and economic construction methods in undeveloped areas.

HOUSING PROGRESS REPORT

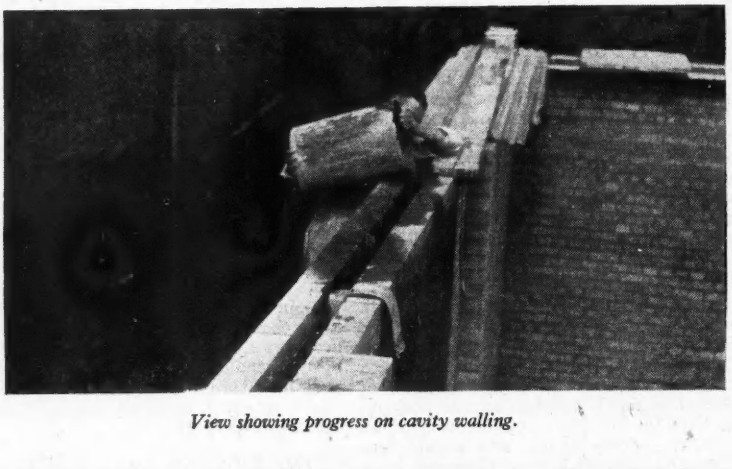
Figures for July

THE HOUSING SUMMARY presented to Parliament on September 6 as a White Paper jointly by the Minister of Local Government and Planning and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during July was 15,965, compared with 17,203 in June. The total number of houses completed under the post-war programme is now 1,086,715 (929,569 permanent and 157,146 temporary).

During July homes were provided by new building, repair of unoccupied war damaged dwellings and conversion for 16,675 families, compared with 17,892 in June and 16,909 in May. This brings the total number of families rehoused by these methods under the post-war programme to 1,374,704. This total does not include homes provided in service camps or requisitioned properties.



The window frames in position.



View showing progress on cavity walling.

Tiling the factory-produced sectional steel roof.

BOOKS

SWEDEN BUILDS. By G. E. Kidder Smith, A.I.A. Pp. 279, illustrated. Published by the Architectural Press, London, and by Albert Bonnier, New York and Stockholm; in collaboration with the Swedish Institute, Stockholm. Price 45s.

THE American author of this handsome book recently produced a companion volume, "Switzerland Builds." Both books are the result of an award to him of a fellowship from the Guggenheim Memorial Foundation; he also received help from the American-Scandinavian Foundation.

Lavishly printed in Sweden, this volume contains nearly 700 illustrations, including several in colour. The publishers' claim that the author is "one of the world's finest architectural photographers" is not unduly exaggerated. He is mainly concerned with Swedish buildings of the last 15 or 20 years, though he gives a brief historical introduction, and there is also a chapter on "Swedish Land Policy" by Sven Markelius which explains the present position of town planning legislation.

Although Swedish architecture is commonly regarded as superlatively excellent and Sweden as an architect's paradise, it now appears that both assumptions are questionable. Architects in Sweden have to cope with a "Welfare State" and with post-war shortages, just as we do. "There is too much forbidding, too much bureaucracy. As a consequence the architecturally mediocre has become the easiest. State controls and investigations are getting almost unbearable. There is waiting, waiting, waiting. One needs permission to build a back porch; one needs fifty permissions to build a school, and then one must generally come to Stockholm to get it. The obvious result is that too much architecture is becoming rubber-stamped, stiff, dry, unexciting, sterile and ingrown, or to use one word —bureaucratic. Perhaps much of this restriction is necessary in an economy greatly upset by the war—but not all of it." Many staple building materials—especially asphalt and steel—are scarce, and the cost of building rose by approximately 75 per cent. between 1935 and 1948.

The author considers that there was "more vitality and freshness in the 1930's than there is to-day," and that sociology has tended to stifle the æsthetic sense. Yet he finds Swedish architecture particularly "civilised," imaginative in detail and craftsmanship, remarkably skilful in the relation of buildings to their natural surroundings, and well furnished with domestic equipment. This "inquisitive, inventive, athletic people" is a nation of "sun-worshippers" revelling in summer recreation out-of-doors, and boasting an illegitimacy-rate of 15 per cent.—a corollary, the author thinks, of too much State control. Although at least half the population prefers detached dwellings, most of the recent urban housing is in flats, usually 8- to 10-storeys high and often with elaborate communal facilities such as restaurants and crêches. Heating in the long, cold winters is very expensive, hence the tendency for people to crowd together in a minimum number of rooms, often only two rooms per family. Balconies and flower boxes are used everywhere, and much is done with bright colours to relieve a generally stark architecture.

School designs are now moving back from dispersed or "open" planning to the old-fashioned grouping of rooms in several storeys round a central hall. Some fine hospitals, post-offices, concert-halls, theatres, crematoria and concrete bridges are also illustrated. There has been a great change of style since the picturesque City Hall at Stockholm was erected in 1923, but this attractive volume contains many suggestive ideas for architects seeking to comply with modern standards of austerity.

M. S. B.

SALISBURY. By R. L. P. Jowitt. ("British Cities" Series.) Pp. x, 86. Illustrated. (B. T. Batsford, Ltd.) 8s. 6d. net.

THE STORY of Salisbury, or "New Sarum," begins in the thirteenth century, when the population and cathedral of Old Sarum was transferred to its present situation in the low-lying meadows by the Avon. This excellent little book, therefore, opens with a chapter on Old Sarum, including a quite remarkably good air-view of the site and remains, though, perhaps, a plan would have been even more convincing. We are reminded that, long after its evacuation, Old Sarum became "the rottenest of all rotten boroughs."

Next come two chapters on the new cathedral—its bishops, architecture and monuments—occupying rather less than half the total length of the book. Unlike the author of the recent companion-volume on York in this series, Jowitt has decided to make his work a guidebook as well as a history, and provides many unhackneyed items of information. For instance, he tells of an aged cleric who paddled through the ice-cold floods that invaded the nave in January, 1915. He states that the spire is two feet out of plumb, and includes a dizzy "worm's-eye view" of one of the piers bent by the immense weight of the tower and spire. As he says, these features were never intended when the piers were built, for the isolated campanile demolished by Wyatt in 1789 contained the bells. He illustrates that vanished structure from an old print. Without exonerating Wyatt, one feels, when looking at the old engraving, how immeasurably the great Salisbury spire has gained in effect by being deprived of its not very graceful competitor. Wyatt, or his clerical employers, obtain a good mark for their laying out of the lovely lawn of the Close, which was in a deplorable condition before Wyatt's day; but he comes in for frequent censure for his treatment of the church itself.

Attention is drawn to the ingenious and unique provision of an invisible "plumbers' yard" between the church and the cloister, so that unsightly building materials and plant can be stored out of sight. Admirable as is the author's detailed description of the cathedral, the next chapter, devoted to the 70 and more buildings—mostly of great beauty—that surround the Close, is still more valuable, and is well illustrated. His opinion that the Close provides the finest setting that any English cathedral possesses is quite justified. Very properly, it was "the scene of Martin Chuzzlewit's architectural training, Mr. Pecksniff having required his pupils to draw the cathedral from every point of the compass."

The three parish churches of the city are also described, with its other historical buildings, and a concluding chapter touches briefly upon places of interest in the neighbourhood. The photographs reproduced are of particularly high merit, and there is a small but handy plan of the city. Altogether, this is a model guidebook-history for architectural students and for visitors in general.

M. S. B.

OXFORD: A BOOK OF DRAWINGS. By Gerald Gardiner, introduced by Levi Fox. Pp. 39. (Garland Press, Bristol.) 5s. net.

THIS IS THE FOURTH in a series entitled "The Garland of England." According to the publishers' announcement, "though not guidebooks in the usual sense, these books give the visitor a general picture or appreciation, which . . . marks them out . . . as books to buy for an introduction to the district or town, to keep for a souvenir, and to send as a gift to discerning friends." That is a very fair description of this slim book, in which the most prominent feature is the set of a dozen admirable line-drawings by Mr. Gardiner, representing accurately and artistically the most notable historical buildings in Oxford.

The selection of subjects, if orthodox, is skilful, and should meet the taste of the average visitor to Oxford. The points of view are well chosen and often dramatic. The accompanying text is equally satisfactory, consisting of a general introduction, followed by brief notes on the various colleges and other important buildings.

Mr. Fox obviously knows Oxford intimately and has summarised its peculiar characteristics in a concise and readable form, but not all readers will agree that Exeter College chapel is "magnificent." He might have added some reference to the library at Queen's College. The buildings illustrated are all older than 1800, but the choice well pleases the average visitor—and certainly the American visitor. Nevertheless, the map on the end-paper should have shown the New Bodleian, Nuffield College (both mentioned in the text), and the row of modern buildings in South Parks-road; to say nothing of such useful landmarks as the post office and the bus station.

M. S. B.

YORK. By John Rodgers, M.P. ("British Cities" Series.) Pp. x, 94. Illustrated. (B. T. Batsford, Ltd.). 8s. 6d. net.

THIS ATTRACTIVELY PRODUCED, useful and well-written little volume is the work of a man who was born and bred in York and knows that famous city well. Though very readable, it is scholarly, and contains a bibliography, reminding us how many books have already been written about York and how much historical interest the city possesses. It is only fitting that this great metropolis of the North should find a place among the publishers' series of "British Cities," for it is, more than any other, our leading provincial capital; and it retains many ancient customs, privileges and ceremonies dating from the Middle Ages, as well as important Roman remains. It is, indeed, as the author says, "a veritable capital city with all the pride and ancestry and culture of a capital," as it has been for nearly two thousand years.

Here there are old craft-guilds, second only in number to those of the City of London, and three of them still possess their mediæval halls. The York school of glass-painters is celebrated, and it has been stated that "at least half the mediæval glass in England is to be found in York, and it is all of unparalleled quality." It is the finest example we have of a walled city and contains notable examples of architecture of nearly all the historical periods. Its only major lack is a university, for which Mr. Rodgers advances an earnest plea, claiming that the city is "an ideal educational centre, not too big and with the right atmosphere for discussion and discovery, a place where

men and events fit into their right perspective."

During the second world war York suffered relatively lightly from air attack though its beautiful fifteenth-century Guildhall was gutted and one ancient church, St. Martin-le-Grand, was destroyed.

Mr. Rodgers treats his subject chronologically from Roman times to the present day, so that the Minster receives only incidental mention and then mainly for its magnificent stained glass. The author makes it clear that he does this intentionally: "So many books have been written about the Minster that it would be an insult to describe it here or to trace its long and complicated history." So there is no plan of this great church, of St. Mary's Abbey, or of any other building mentioned. In fact Mr. Rodgers has given us a history of York, not a guidebook; but adequate guidebooks are available; and for reading before, during and after a visit to the city no more pleasant and informative companion could be desired.

The illustrations are worthy of the text, well selected and well produced. Most of them are from photographs, but some are from old engravings. Where the latter are used, the captions could usefully state how far the present state of the building differs from the aspect illustrated, especially if it has ceased to exist. M. S. B.

THE SURVEY OF LONDON (VOLUME XXIII)—SOUTH BANK AND VAUXHALL. Edited by Sir Howard Roberts and Mr. Walter H. Godfrey. Pp. 170 (text) and 129 plates and maps. (Staples Press, Ltd.) Price 30s.

THERE has just been published the 23rd volume of the London County Council's descriptive survey of London which covers the northern part of the borough of Lambeth, extending from the River Thames to a boundary starting a little to the west of Blackfriars and running to Lambeth-road, then south-eastwards to Kennington Park-road and via Kennington-lane to Vauxhall. It has been opportune to deal with this area as it includes the site of the South Bank Exhibition.

The book is edited by Sir Howard Roberts for the London County Council and Mr. Walter H. Godfrey on behalf of the London Survey Committee. The study follows the recognised typical lines of previous surveys, in the main archæological but with the broadest possible scope and becoming more detailed as it approaches comparatively recent times, making a point of including features likely to disappear in the near future, though, of course, the main features are those regarded as of permanent value, Lambeth Palace being the most important of these.

It is a pity that this section was not extended a little further towards the south as its limiting line cuts through the Kennington area and also leaves Vauxhall somewhat isolated, these having more natural links with the riverside portion than with South Lambeth. However, the present volume covers a very substantial instalment and possibly represents a fair moiety of Lambeth as a whole. Much of the part included was low lying land liable to flood and late in development relatively to the other bank of the river, though the position of the palace and the riverside village to the south of it demanded the formation of some made-up service roads in proximity to these and leading to the old horse ferry where Lambeth Bridge now stands.

Important changes in the character of this district arose from the building of Westminster Bridge (1750), Waterloo Bridge (1817), the extension of the S.W. Railway from Vauxhall to Waterloo (1848) and the formation of the Albert Embankment (1868). Subsequently, the frontage towards the Thames gained dignity by the erection of St. Thomas's Hospital and other buildings on the Albert Embankment and the London County Hall below Westminster Bridge, while latest of all the South Side Exhibition with its embankment extends the organised frontage as far as Waterloo Bridge. One permanent building is already here, another is planned for but the ultimate destiny of the remainder of this has not yet, one understands, been settled.

This history of this particular area is made a feature in the present volume including an interesting note on the production here of Coade's Artificial Stone, from 1769 to 1837, the last known work being the lion from the Lion Brewery at present in the Exhibition. The process used is not now known but it was evidently a quite successful one and according to the records included firing in a muffle furnace.

On the adjacent site of the County Hall was found a Roman boat, the remains of which are now in the London Museum; most of this site had been occupied by riverside works and from one of these Maudslay, Sons and Field launched, in 1832, the first iron vessel built on the Thames. Items such as these and other historic incidents give literary interest to the pages of this volume and the numerous pictorial illustrations, plans and architectural details are fully up to the standard of the series of surveys to which this is the latest edition.

H. V. L.

BRITANNICA BOOK OF THE YEAR, 1951 (Encyclopaedia Britannica, Ltd.) Price £3.

THE Britannica Book of the Year, 1951, the annual supplement to the Encyclopaedia Britannica, has been published. It records the outstanding historical, political and economic events of 1950, surveys developments in industry, science, the art, the humanities, religion, law and sport, and contains biographies of the personalities of the year as well as a 16-page diary of events. The volume notes that office building design in the U.S. was characterised by greater simplicity bordering on barrenness, and that skyscraper building lost its popularity. The first permanent licensed house to be built or completely rebuilt since the outbreak of world war II is also referred to.

STRUCTURAL THEORY. By Hale Sutherland and Harry Zake Bowman. (London: Chapman and Hall, Ltd.) Price £2.

THIS VOLUME introduces the basic conceptions and principles of structural theory relating to trusses, rigid frames and space-frameworks. Important additions have been made to the Fourth edition and these together with other revisions reflect contemporary trends in engineering instruction. As in previous editions this book is concerned primarily with the study of structural stress analysis. Three major additions have been made to the chapters dealing with slope and deflection and rigid frames: the solutions of compound trusses by means of the Williot-Mohr diagram, a brief explanation of the fixed points in continuous beams and an extensive consideration of members of varying moment of inertia supplementing the treatment of moment distribution. The treatment of the Morris method is expanded.

BOOKS RECEIVED

SHIPPING MARKS ON TIMBER. 13th Edition. (London: The Timber Trades Journal). Price 42s.

REINFORCED CONCRETE SIMPLY EXPLAINED. By Oscar Faber. (London: Oxford University Press.) Price 8s. 6d.

RENT CONTROL SUPPLEMENT. By Denis Lloyd and J. Montgomerie. (London: Butterworth and Co. (Publishers), Ltd.) Price 9s. 6d.

NEW WAYS OF BUILDING. 2nd Edition. Edited by Eric de Maré, A.R.I.B.A. (London: The Architectural Press.) Price 30s.

ENGLISH ROMANESQUE SCULPTURE, 1066-1140. By George Zarnecki. (London: Alec Tiranti, Ltd.) Price 7s. 6d.

ADDING LIFE TO YEARS. By Lord Amulree. (London: The National Council of Social Service, Incorporated.) Price 8s. 6d.

THE UNSOPHISTICATED ARTS. By Barbara Jones. (London: The Architectural Press.) Price 25s.

BRITISH FURNITURE TO-DAY. By Ernö Goldfinger. (London: Alec Tiranti, Ltd.) Price 7s. 6d.

CARPENTRY AND JOINERY (Intermediate). By A. E. Bridgwood. (London: George Newnes, Ltd.) Price 35s.

Books noticed above can be obtained from the Manager, "The Builder" Bookshop, 4, Catherine-street, Aldwych, W.C.2. A remittance should accompany the order.

OBITUARY

C. A. Morrison, C.B.E., F.R.I.C.S.

We regret to record the death of Mr. Charles Archer Morrison, C.B.E., F.R.I.C.S., chief quantity surveyor of the Directorate General of Works, Ministry of Works, who died suddenly on September 1. Mr. Morrison entered Government service in H.M. Office of Works in 1912. After successive stages he was appointed the head of the quantity surveyors' division in 1937, at a time when the Ministry of Works was engaged on a very large building and civil engineering programme, and he saw a considerable expansion in the work of his division. He was concerned with the major works of ordnance factories, research establishments and atomic energy projects, apart from normal Government building work. He made a special study of comparative costs in building, which was particularly valuable.

In 1944 he was awarded the O.B.E. and in 1950 the C.B.E. He was an active member of the Quantity Surveyors Committee of the Royal Institution of Chartered Surveyors and served on several interdepartmental committees.

He had outstanding enthusiasm and energy for his work in the public service and his accumulated experience of such a varied character was a great asset to the Quantity Surveyors' Division and the Ministry of Works as a whole. His death has caused the loss not only of a man who was a great friend to many, but also of an eminent member of the quantity surveying profession.

C. Macfarlane Cullen

The death has occurred at his home at Hale, Cheshire, of Mr. C. Macfarlane Cullen, chairman and joint managing director of D. Anderson and Son, Ltd., Stretford, Manchester, Belfast and London.

Mr. Cullen joined the company in August, 1910, and was appointed chairman and joint managing director in 1947. He was also a director of British Plaster Board, Ltd.

TIMBER "BRAINS TRUST" VISITS WALES

Some Aspects of Timber Utilisation

A STRONG team was present to answer questions at the first of the Timber Development Association's timber "brains trusts" to be held in Wales, which took place at Cardiff recently. The team comprised Mr. Phillip O. Reece, A.M.I.C.E., M.I.Struct.E., A.M.I.Mun.E., Director of the T.D.A., Mr. H. A. Cox, M.A., Dip.For., Late Principal Scientific Officer of the Forest Products Research Laboratory, Mr. W. D. Russell, Forestry Commission, South Wales Conservancy, and Mr. Cyril David, J.P., past-president Timber Trade Federation, with Mr. D. Cecil Williams as Question Master.

The first question put, was: Is there any ground for the belief that artificial seasoning is inferior to natural seasoning?

MR. COX: I think the best answer to that question depends on some tests which have been carried out on matched samples of air-seasoned and kiln-seasoned timber at the Forest Products Research Laboratory at Princes Risborough. The two samples were dried to the same moisture content—that is important—and then they were tested in the timber mechanics laboratory. There was no significant difference between them. It was impossible to see that one sample was stronger in any respect than the other. Mind you, I said they were matched samples and I also said that they had been seasoned to the same moisture content.

I will tell you how the idea has got abroad that kiln seasoning injures timber. I thought so myself once. In the early days of kiln seasoning we used to get a lot of wood from America. We had no kilns worth mentioning in this country at that time and some of the timber which came over in those days had been literally cooked and had been made so brittle that you could break it over your knee. That was just getting the water out of the wood in the quickest possible time and anyone who sets off to season timber in that way is asking for trouble. I do object to the term "kiln seasoning" because to my mind there is a difference between seasoning and drying. I do not think it is a significant difference from the point of view of utilising most kinds of timber, but with some timbers at any rate, during the process of air seasoning certain changes take place—they are slow changes. If the same timber is kiln dried these changes do not have time to occur so there are certain differences between air seasoned timber and kiln dried timber, but they are not significant differences from the point of view of uses.

Cause of Price Increases

The price of timber has recently risen very considerably, is this anything to do with partial de-control? This question was answered firmly in the negative.

MR. CYRIL DAVID: Well, I think there is not a shadow of a doubt about it that partial de-control has nothing whatsoever to do with the prices going up. After all, we must realise that the Government is at present buying two-thirds of the available supplies of softwoods.

I am talking now about softwoods and to say that one-third has forced the price above everything else seems to argue "the tail wagging the dog." It was the first purchase made on the Pacific Coast which has set the standard for the rising price. The rise in price has been accentuated very considerably by rearmament and that has had the effect of sending up the price of timber. It has had the effect of sending up the price of practically every raw material which is wanted and used in the rearmament programme. I do not think anyone can really say that the action of buying a smallish amount of timber in this country can have had the effect all over the world of sending the prices up. It seems to be quite an untenable suggestion.

Unseasoned Hardwoods

Another questioner asked, Why are the majority of hardwoods that are on sale today so very difficult to use? They are very wet or in an unseasoned condition.

Mr. Cox: I think that is an economic question. It is fairly obvious—you get the timber into the yard one day, it is sawn within a few days, someone comes in and asks "Have you any so and so? Well, it is a bit wet but I must have it" and it is sold without much seasoning. I think that is the reason. If you specify that you want timber seasoned to a certain moisture content you can get it. It is going to cost you more but it may be worth it.

Mr. Reece: I will support that answer. Take the building industry as a whole. There are as many men employed in it to-day as there were before the war but it is getting something less than half the timber. It is going in and out of stock very quickly. There is not time for the ordinary operations which before 1939 would be considered essential. It is passing out of the hands of the trade far too quickly. There is just as much work going on as before the war but there is only half the amount of timber to keep that industry going.

Question Master: The answer to that question seems to be "the law of supply and demand." You must not be in a hurry, you must exercise more patience.

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Blue Stain

A question that had been sent in was: Can timber containing blue stain be used in building with confidence?

Mr. Cox: I think, to understand the answer which I propose to give, it is necessary to point out that blue stain is a fungus. It is not one of the fungi which destroys wood. I say that absolutely definitely and without any fear of contradiction whatsoever. I cannot be more definite than that. The fungi which destroy wood feed on wood by means of hyphae which they develop. They soften the wood until it is almost liquid. Now the blue staining fungi do not feed on wood at all. They feed entirely on the contents of the cells and the contents are most abundant and always confined to the sapwood. In the sapwood cells there are starches or sugars, depending on the time of the year, and it is those substances on which the blue stain fungi feed. It has been shown very definitely that the effect of blue stain on the strength of timber is negligible and with one exception I would say that so far as strength is concerned I would use blue stained timber just as readily as any other; that one exception is ash. The only strength property which is affected by the blue stain fungi is toughness. As ash is used almost entirely on account of its toughness, obviously one would not wish to use blue stained ash. One might get just that little reduction in strength which would cause failure at an inopportune moment. There is just another side to this question, and that is, for carcassing timbers the blue stain does not matter providing the timber is reasonably dry, but for finished work where one wants a clear finish, the blue stain will show through the finish and so for that purpose it is not suitable. Blue stain does not occur unless the timber is damp. Now if blue stain develops, the man who knows anything about timber dries it as quickly as he can, either in the yard or in a kiln, and if timber is treated in that way it can be used quite confidently without any fear of failure.

Shock Resistance

Mr. Reece: I ought to disagree with Mr. Cox on principle but he has not left me much scope. There is one point—he said that blue stain fungus is a fungus which does not attack or destroy wood. I think there are sixteen different kinds of fungi all classed under "Blue stain fungi." On the question of toughness I quite agree. The only slight weakening effect is in the ability of wood to resist shock and I believe there is only one place where that is important and that is in aircraft construction. Personally I would not like to recommend using blue stained wood in aircraft construction but I would have no hesitation in using it anywhere else.

To the question Why are cricket bats oiled? Mr. Cox said: I will put you a question. "Why does a carpenter, when he gets a new plane, soak it in linseed oil?" Because he knows that the linseed oil in the course of a short time will harden the stock

of his plane and make it slightly more easy to work. That is the reason why cricketers oil their bats.

All bats are rolled or pressed before they go into use to harden the surface and the owner of the bat carries on the good work by putting on a coat of linseed oil on the face which keeps the face hard and makes it less likely to surface fracture in use.

Conversion of Timber

How long should a tree remain unconverted after felling? was the next question.

Mr. Russell: It is generally held in the forestry service that the best treatment for most home-grown timbers, hardwoods in particular, is to fell them in the winter while the sap is down, then to take the logs into the mills and convert them into plank or stick and allow them to season in plank.

Mr. Cox: I think there is more behind this question than appears in the actual wording; I think that someone has possibly had a nasty experience with beech. Someone is laughing and I think I have hit the bull's eye. Now as Mr. Reece has said, it depends entirely what species you are talking about. You can leave oak for ten years if you like, providing you don't want to use the sapwood, but if you leave beech for ten weeks you are very likely to have "doating" at both ends of the logs. I am speaking from personal experience, I had to supply some beech in the war when transport was extremely difficult. It was four months by the time we got the logs into the mill and by the time we had cut them up the "doat" had penetrated four feet at the ends. The same applies to sycamore because it is very likely to stain. The sooner it is cut up and stacked, with the planks on end, the more likely it will be to retain its good, white colour. With elm one can keep it for months and it will not hurt. Ash is inclined to split from the ends and the sooner one gets ash into plank the better. There is a different answer for every timber.

Mr. Reece: I would like to ask Mr. Cox a question. If the alternative was to cut a log into plank or leave it lying in the forest, would he not agree that it would be best to cut it without delay?

Mr. Cox: With most species, yes. Some of the finest oak work which has been carried out in this country in the past has been carried out from logs which have lain in the forest until the whole of the sapwood could be rubbed off. The oak which went into the House of Commons was not treated in that way but in the old days it was quite a common practice, if one had a good wainscot oak, to leave it until the sapwood had rotted away. Nowadays it is so scarce that the best thing is to cut it up, as Mr. Reece says.

I do not suggest leaving softwoods for ten years. If you keep the softwoods for ten weeks you may have a blue stain in the sapwood.

QUESTIONER: I would like to ask you an old one, What is deal?

MR. DAVID: The common idea is that there is such a wood as deal. There is not such a wood as deal. A "deal" is a size. The idea of the size of wood varies a little but normally we would call anything 9 in. by 3 in. or upwards a deal. Until it gets up to a size like 12 in. by 6 in. then it is generally called a half timber. For ordinary commercial sizes 9 in. by 3 in. or 11 in. by 3 in. are deals. Strictly speaking, 11 in. by 2½ in. is a batten but it is generally called an 11 in. deal. A deal is generally a fair-sized plank.

QUESTION MASTER: The next question is very much more simple. What is a standard and how did it originate? We are all used to buying timber at so much per standard.

MR. DAVID: A standard is a shortened form of Petersburg standard hundred and I am glad to say that they still call it this and not a Leningrad standard hundred. It is 720 ft. of 11 x 3. I believe it had something to do with a long hundred or something of that sort in the first place. Anyway, it is 165 cu. ft. and it is the normal standard measure used in the softwood trade.

Corrosion of Metals

QUESTIONER: Are certain timbers likely to corrode metals more than others and where metals are likely to be corroded what are the best methods to prevent this?

MR. COX: There are certain timbers which can corrode metals more than others. One of the worst timbers is oak but not if it is dry. Only when there is a certain amount of moisture present will oak corrode iron—it will also corrode lead. How can one prevent corrosion? Well, by covering the steel or iron with a non-corroding metal like zinc. Where structures have to be built in oak and the oak is not well dried—and one never can dry large-sized timbers of oak—it is always advisable to use hot dipped galvanised bolts. The other timbers which will corrode metal, especially iron, are sweet chestnut, birch and western red cedar. In fact, any timber which has an acid reaction. Acid is the result of fermentation and oak is particularly bad from that point of view. In going about the countryside one sees gates which have been put together with iron bolts, with black streaks down the gates.

It is generally supposed that teak will not cause corrosion—that is wrong. Wet teak will cause corrosion. Dry teak will not. For that reason it ought to be properly seasoned before it is used. In any case it is usually partly seasoned before it is felled. It takes considerably less relatively to season the teak after it is down and converted, but nevertheless wet teak will corrode metals but not as badly as oak. I would add that bitumen paints are very useful protective agents. They are quite cheap and convenient to use.

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L.M.B.A.

Publication of New Handbook

THE 1951 edition of the L.M.B.A. Handbook contains a considerable amount of additional information which will be of use to builders and others associated with the building industry, and the book itself appears in substantially new guise. The outside cover has been redesigned and now carries a larger and more attractive reproduction of the L.M.B.A. coat-of-arms. In addition, the book has been divided into six main sections, with headings standardised, and the index has been extensively revised.

Among the new items included this year are notes on the L.M.B.A.'s technical information service, the Ministry of Works library, the training of foremen and the London Building Acts and bye-laws. The practice notes on the use of the R.I.B.A. contract issued by the Joint Contracts Tribunal have been brought up to date and are printed in full.

The usual directory of Government departments and public authorities is retained, and addresses are given this year of branches of the Gas and Electricity Boards in the London area. A map shows the extent of the L.M.B.A. territory, with the boundaries of all the local authorities in it, and an attractively designed chart traces the relations of the L.M.B.A. with the many other industrial bodies with which it is associated, up to and including the I.L.O. and, more unexpectedly, the T.U.C.

Copies of the handbook have already been sent to Government departments and local authorities and to members, and a limited number are available for sale to others interested from the Secretary, L.M.B.A., 47, Bedford-square, W.C.1, price 15s.

Making Up the Weekly Wage

To enable its members to calculate quickly the weekly wages of their employees, the L.M.B.A. has brought out a new edition of its Wage Tables, carrying the wage rates from 2s. 11½d., where they ended in the previous edition, to 4s. 11½d. They show the wage due in 8ths of an hour, from ¼ to 79 hours, which is assumed to be the highest multiple likely to be required.

The tables are printed in a stoutly bound book which is made to last. It can be obtained by members from the headquarters of the L.M.B.A. for 7s. 6d., post free.

Airfield Contract

A contract of over £3 million in value has been placed with John Laing and Son, Ltd., for airfield construction at the National Aeronautical Establishment near Bradford.

INQUIRY BUREAU

Liability for Third-Party Claim

Q.—We employ on various jobs sub-contractors who may be a limited liability company, or an individual, trading as a firm. What is our liability in respect of any third-party claim made by a workman against his employer in respect of any damage done, such as dropping a scaffold board on to valuable plant by an employee of a sub-contractor? MAIN CONTRACTOR.

A.—A legal correspondent writes: It is assumed that no provision has been made in the sub-contract to cover liability for injury and damage arising during the progress of the works. Usually the contractor, in the sub-contract, covers himself in regard to liability, by an indemnity clause under which he will be able to recover if any claim is made against him for injury or damage to persons and property caused by the sub-contractor's employees. The contractor (in the absence of any such indemnity) will be primarily liable under the circumstances mentioned.

In regard to the second part of the query, it is not clear what is in your correspondent's mind by "a third-party claim made by a workman against a sub-contractor's employer." If he means a claim arising out of a matter that is outside the relationship of master and servant set up under the contract of service, then, in the absence of further information, there would be no liability on the contractor unless the latter's servants or agents were responsible for the accident to the employee of the sub-contractor.

Heat Disfiguration

Q.—Some time ago we supervised the dismantling of the domestic hot-water system of a house and the installation of a central heating supply. The small-capacity boiler was taken out and the hot-water cylinder and a larger boiler replaced, together with a double hot-water cylinder calorifier; the system also involves the use of a small expansion tank. The whole system is working satisfactorily but for the fact that in the dining room and bedroom (where there are radiators), and the bathroom (where, in the airing cupboard the hot-water tank is housed), all the ceilings are badly disfigured with what looks like black smoke. There is, however, no fire near. I shall be glad to know what remedy, if any, can be made to stop or lessen this disfiguration on the ceilings and walls. PLUMBER.

A.—A technical correspondent writes: The disfigured ceilings about the radiators and hot-water pipes are quite usual. This is due to the convection set up by hot air rising and impinging the smuts and particles of black upon the walls and ceilings; thus dust, blackened by heat, is deposited.

Partly for this reason radiators are generally placed under a window, or, if they are placed on inner walls, they are provided with a shelf or metal deflector shield above the radiator in order to deflect the convected hot air away from the wall surface. Many suitable shelves or deflectors are available in metal.

With reference to hot-water pipes, the provision of deflectors is not so simple and easy, but the disadvantage can be reduced, if not altogether prevented, by covering the pipes (if they are not required as actual heating surface), with a non-conducting composition such as asbestos lagging. This would reduce the heat emission, reduce the disfigurement and economise in fuel consumption.

Refacing Cement Screeded Walls

Q.—Owing to the difficulty of obtaining skilled local labour for putting a new facing to the front of my house, I decided to do the work myself. The present facing is a plain one of cement, an inch thick. So far I have put 6-in wide surrounds on all windows, and to the door, and these are now standing out 1 in. from the old face of the wall.

It is my intention to pebble-dash the remaining space from roof to ground, using a "golden pea" pebble of approximately ¼-in. gauge.

As this will necessitate the provision of a thin layer of cement on which the pebbles will adhere, I have deeply grooved the existing cement all over with a chisel. My problem now is to find a satisfactory method of applying this thin layer of cement and of throwing on the pebble. If you could suggest any method of doing this I should be very pleased A. J. R.

A.—A technical correspondent writes: The work referred to in the inquiry is plasterers' work and the following specification is suggested. That the existing Portland cement screeded walls be properly washed down with the aid of a wire brush and plenty of clean water. The surface should be roughly hacked all over with a chisel and hammer so as to form a new surface. An application of a material that will ensure adhesion of the first or floating coat is advised. This should be made of three parts of washed sand with either one part of normal Portland cement or water-repellent cement. This should be ¼ in. thick and well keyed and left for 24 hours at least. The second coat, ¼ in. thick, should be two parts of washed sand and one of Portland cement. The dash coat of ⅛ to ¼ in. pebble, well washed, should then be applied by throwing on to the second coat before it is set, using a large gauging trowel.

To get a good result it is a two-man job, one to place the second coat and another to follow up with throwing on the pebbles. Care should be taken so as to avoid any joints and to ensure that putlog holes are all made good before the second coat is applied.

The name and address of the makers of the adhesion product referred to has been sent to the inquirer.

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THREE DEVELOPMENT PLANS

WARRINGTON

Housing and Schools the First Priority

WARRINGTON'S borough surveyor (Mr. J. C. Hughes) has prepared a draft development plan which visualises the town by the year 1971, and which will shortly be considered by the Town Council.

Organisations and firms in the town have been invited to express any observations they would like the council to consider. The "man in the street" is given the same facilities to express his view of the plan.

First priority is given to schemes of urgency such as houses and schools, then roads and schemes to relieve traffic congestion, and finally amenities. It is suggested in connection with the housing schemes that the houses should be in the nature of communities with all their amenities, including schools, shopping centres, churches and other social buildings.

Mr. Hughes is non-committal regarding the progress that will be made in connection with the programme. The availability of labour, materials and finance will, of course, govern the progress towards the realisation of the plan, he says.

ST. HELENS

Disposal of Colliery Dumps

IN a 20-year development plan prepared by Mr. Mortimer Ward, St. Helens borough engineer, it is proposed to use the huge colliery waste heaps for filling and levelling what is known as the "flash," which it is proposed to turn into parks and playing-grounds. Another colliery waste heap will be planted over, while chemical waste heaps will be converted into recreation grounds. The cemetery is to be extended and a crematorium will be provided, and while some 13,000 more houses will be required, there will still be an overspill into the country of about 9,800.

An inner ring road to by-pass the central shopping and business centre of the town is contemplated in the scheme, while abandoned pits and low levels will be restored to suitable levels by the tipping of domestic and industrial waste.

BIRKENHEAD

Houses and Industry

Birkenhead Borough Surveyor has produced a development plan which visualises the erection of 8,000 houses during the next 20 years and the development of 300 acres of land for industrial purposes. The scheme has received the approval in principle of the council and is being submitted to the Ministry of Town and Country Planning. For planning purposes the town has been divided into zones for specific development—industrial, residential, educational requirements, public buildings, commercial, agricultural, shopping, etc.

NEWS IN BRIEF

Call for More Savings

In a message to delegates attending the Trades Union Congress, at Blackpool, Mr. Alfred Roberts, this year's president of the congress, said that a high level of savings is vitally important at this time. He appealed to all trade unionists to co-operate actively with the National Savings Committee in extending the numbers of both works savings groups and membership of existing groups.

Peak District National Park Board

Mr. Hugh Dalton, Minister of Local Government and Planning, has made an Order setting up a Joint Board for the Peak District National Park. The Order provides for the constitution of a board of 27 members, of whom 18 members will be appointed by the constituent councils. Among the nine members nominated by the Minister is Major Gerald Haythornthwaite, T.D., A.R.I.B.A., A.M.T.P.I., chairman of the Joint Committee of the Council for the Preservation of Rural England and Peak Hill Farmers.

Road Accident Research

In June last the British Road Federation wrote to the Ministry of Transport proposing that a sum of £5m. a year for ten years should be made available for research into the improvement of roads to curb the steadily rising rate of road accidents. In reply, the Ministry of Transport said their problem at the present time was to spend to the best advantage the limited resources which the country could afford to put into roads without affecting other vital sectors of the national economy, and they could not agree that it would be wise to devote £50m. to research at this juncture. What they lacked was not knowledge but money to apply it.

New Flats at Welwyn

Homestead Court, the first major building contract to be completed by the Welwyn Garden City Development Corporation, and the first practical step towards introducing a substantial middle-class element in the south-eastern area of the town, which has had previously a predominantly working-class population, will be opened to-day (September 14). The total cost of the scheme is about £200,000. It comprises 92 flats and the restaurant block, which contains a restaurant room seating 120 persons, a private dining-room seating 30, and a lounge for which a licence is being sought. The architects for the scheme are Messrs. Louis de Soissons, A.R.A., and Partners.

Electricity in Hospitals

The Electrical Contractors' Association (Incorp.) inform us that they are frequently consulted by members who wish to know whether there are any special regulations particularly applicable to electrical installations in operating theatres. Although there are no mandatory regulations, a Memorandum has been issued by the Ministry of Health entitled "Precautions against Anaesthetic Explosions in Operation Theatres," which has a definite bearing on the electrical installation and its subsequent maintenance. This Memorandum — reference "Memo 191 Med. Revised"—has just been re-issued, and any member who is interested in this type of work should apply to the Ministry of Health, Whitehall, London, S.W.1.

New Fawley Refinery

The Prime Minister is to perform the official opening ceremony of the new oil refinery at Fawley in Hampshire to-day. Constructed by the Esso Petroleum Co., Ltd., at a cost of about £37½m., the refinery is claimed to be the largest in Europe, covering an area of about 1,000 acres.

Swedish Diary

A very interesting account of the official visit to Sweden of the Eastern Federation of Building Trades Employers, entitled "Swedish Diary," has been written by Mr. Robert W. Porter, F.C.I.S., A.S.A.A., A.I.M.T.A., Director of the Federation. Mr. Porter was the author of an article on present-day building in Sweden which appeared in our issue of August 10.

Record South Bank Attendance

More people visited the South Bank Exhibition and the Festival Gardens, Battersea, last Saturday (September 8) than on any one day so far. When the turnstiles were closed 133,409 had entered the exhibition and 156,848 the gardens. These figures broke the previous highest South Bank attendance record figure by 25,236 and the previous highest record at the gardens by 32,861. By 6.35 p.m., total attendance figures at South Bank had passed the record day's attendance for the Great Exhibition of 1851—109,915.

Salisbury Cathedral Spire

The restoration of the spire of Salisbury Cathedral was completed on September 7, exactly two years after the work had commenced. The steeplejacks who had been working on the 404-ft. spire, at times in very high winds and intense cold, were congratulated by the Mayor on the successful completion of their task. More than £43,000 has been raised toward the £100,000 required for the restoration of the whole cathedral including £30,000 for the repairs to the spire.

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WAR DAMAGE

£1,000m. Paid Out in Claims

THE War Damage Commission have paid out £1,000 m. since April, 1941, when they made the first payment. War damage contributions by property owners to the Government total £198 m.

During the war some 3,420,000 buildings in Great Britain and Northern Ireland were damaged or destroyed by enemy action, including 3,160,000 houses. Over 40 per cent. of the buildings were in the Greater London area.

Individual payments amount to £689 m.—£475 m. for the cost of repairs done and £214 m. representing the loss in value where war damage repairs would have been uneconomic or undesirable. In addition, £270 m. has been paid to local authorities for the repair of houses and for site clearance, and the remaining £41 m. to the Ministry of Works for the repair of houses and for public utility undertakings and roads.

Of the total payments, £705 m. was for houses, £84 m. for factories, £67 m. for commercial buildings such as warehouses, £37 m. for shops, £24 m. for offices, £12 m. for hotels and licensed premises, and £8½ m. for churches. Greater London's share of the payments represents about 60 per cent.

During 1948, £149 m. was paid, in 1949 £105 m., in 1950 £92 m. and for the first six months of 1951 £39 m. Payments are at present being made at the rate of about £1¼ m. a week.

APPRENTICES' SUPPER

THE ANNUAL APPRENTICES' SUPPER of Higgs and Hill, Ltd., was held at the Ardington Rooms, Clapham Junction, on September 8. MR. G. E. HILL, chairman of the company, said that the firm now had 71 apprentices. This was a slight decrease on numbers, but the ratio of qualified tradesmen to apprentices had scarcely altered. Most of the apprentices were at work in London, but there were 12 at Coventry and one at Leeds. Of these, 26 were bricklayers, 27 carpenters, nine packers, five plumbers, three electricians and one fitter. He was pleased to point out that E. J. Berry had won a B.A.T.C. Scholarship. This was the second awarded to an apprentice in the firm. The L.M.B.A. have recently announced their intention of awarding prizes for apprentices and Mr. Hill concluded his speech by bringing this to the notice of his audience.

MR. D. WOODBINE PARISH, vice-president of the L.M.B.A., was the principal guest of the evening. The history of the building industry and its tremendous advances were the main theme of his speech. The future would require each member of the industry to know his own job supremely well and to acquire a greater all-round appreciation of building. He said that it was the prime duty of each apprentice to learn his trade thoroughly, become a good citizen-craftsman and then to increase his technical knowledge on the wider aspects of the building industry. Good tools and the best text-books combined with a greater sense of moral integrity and mental awareness, were the important factors for furthering the oldest industry in Britain. Mr. Woodbine Parish concluded by congratulating the apprentices in general and E. J. Berry in particular.

OFFICIAL NOTIFICATIONS

Cement Prices

Following a review of costs and prices of the cement industry, the Minister of Works has authorised an increase (effective as from September 3) of 1s. 6d. per ton in the price throughout Great Britain and Northern Ireland of ordinary Portland and rapid hardening cement. This is mainly due to increases in the cost of labour and materials.

The general price advance is combined with further minor and local regradings of prices. The additional premium for rapid hardening cement is advanced by 2s. a ton.

In addition, certain price adjustments of ordinary Portland and rapid hardening cement—in some cases increases and in others decreases—are made in some areas of England and Wales (mainly in Northumberland, Cumberland, Norfolk, Flintshire and Carmarthenshire) to eliminate anomalies which have arisen in the price schedules over a period of years due to changes in the cost of distribution.

Census of Production

The first section of the final report on the Census of Production for 1948 was published on September 7; it comprised the Introductory Notes and the report on the Blast Furnaces Trade.*

The complete final report will include 156 separate booklets corresponding to the trades covered by the census. The Introductory Notes will describe and explain the scope and methods of the census, the bases of the questions asked, and the calculations made in compiling the figures shown in the trade reports.

Further trade reports will be published at short intervals, and announcements will be made in the "Board of Trade Journal" as they become ready for publication.

Imports of Building Materials

The Board of Trade announce that from September 11 additions and alterations have been made to the list of goods which may be imported from certain countries without individual licence from the usual "liberalisation" list of soft currencies. The additions include: plywood, laminboard, blockboard and batten board, excluding boards faced with materials other than wood veneers.

Exports to Persia

The Board of Trade have revoked outstanding licences for the export to Persia of certain scarce goods, among them iron and steel, including semi-manufactures (e.g. railway track materials), non-ferrous metals, alloys and oil.

Door Holders and Stops

The Commissioners of Customs and Excise have reviewed the liability to purchase tax of door holders, door buffers and door stops, and have decided that, in future, such of these articles as are designed to be affixed to the structure of a building will be regarded as entitled to relief under Group 11(n) of the tax schedule.

This decision does not apply to door stops of types which are not designed to be fixtures and merely position the door by their own weight. Door stops of this description will continue to be chargeable either at 33 per cent. under Group 11 (a) or—if they consist of or incorporate figures, are decorated by hand-painting or are miniatures of or otherwise imitate other articles—at 100 per cent. under Group 29 (a).

* Price 2s. (or post free 2s. 1½d.) and 1s. 6d. (or post free 1s, 7½d.) respectively. H.M. Stationery Office.

THE SCOTTISH BUILDER

Scotland's Housing in July

THE NUMBER of new permanent houses completed in Scotland in July was 1,343. This brings the total of completions this year up to 12,153. The total of new houses built under the post-war building programme is now 135,226 (103,050 permanent, 32,176 temporary). Including accommodation made available by conversion and adaptation of existing premises, requisitioning and in service camps, 147,793 homes have now been provided in Scotland since the war. These figures are included in the monthly housing return published on September 6 by the Department of Health for Scotland and the Ministry of Local Government and Planning. July's total of 1,343 new permanent houses includes 1,253 built by local authorities and the Scottish Special Housing Association, 55 by private enterprise and 35 by Government Departments.

NEW BUILDINGS

Dumbarton.—Plans in hands of the National Coal Board (Scottish Division), Eglinton-cres., Edinburgh, for new burgh gasworks to be erected at an estimated cost of £1,146,000. The development engineer is W. S. King.

Dumfries.—Plans in hand for the erection of 150 houses at Larchfield housing site at an estimated cost of £185,000. The architect is R. S. Osbourne (F.), Council-chbrs., Dumfries.

Dunbartonshire.—Plans in hand for the erection of 313 houses at the Drumchapel housing site. The architect is Archibald G. Jury (F.), Corporation Housing Department, Glasgow Cross, The Trongate, Glasgow, E.C.

Edinburgh.—Corporation granted warrant by Dean of Guild Court to build 498 houses at the Drylaw Mains South housing area. Est. cost, £570,039.

Falkirk.—Dean of Guild Court approved plans by T.C. for erection of 175 houses. Est. cost, £246,928. Twenty-four are to be built at Easter Carmuirs, Camelon; 80 at Windsor-rd., Camelon; 56 at Langlees, Bainsford; and 15 plus two shops at Main-st., Bainsford.

Glasgow.—A new factory at Springfield-rd., Dennistoun, has been approved, for which plans are in the hands of the Sun Ventilating Co., Ltd., 206, Springfield-rd., Glasgow, E.C.

Glasgow.—Plans for new workshops to be erected at the junction of Kingston and Tradeston streets are in the hands of Gavin S. Keiller, 70, Kingston-st., Tradeston, Glasgow, S.E.

Glasgow.—Plans for a new Cavendish-st. factory are in the hands of Dollar Rae, 271, Eglinton-st., Eglinton Toll, Glasgow S.2.

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Glasgow.—Approval has been given for the rebuilding of the three-storeyed building of William Motherwell & Co., Ltd., 38, Portman-st., Glasgow.

Glasgow.—New premises to be erected at 31-35, Arcadia-st., London-rd., Bridgeton, for the L.F.T.C. Ltd. The architects are Millar & Black (A.), 132, West Regent-st., Blythswood, Glasgow, W.C.2.

Glasgow.—Plans to be prepared for David MacLaren (Caterers), Ltd., Queen Margaret-rd., for alterations and additions at St. George's-rd., for which the architects are Honeyman, Jack & Robertson (F. & A.), 92, Bath-st., Blythswood, Glasgow, W.C.2.

Plains.—Plans to be prepared for a new Lanarkshire Public School, for which the architect is William Watt (F.), Albert-rd., Motherwell, Wishaw.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

SEPTEMBER 17.

***†Nottingham T.C.**—Construction of prim. sch. at Askeby-dr. City E. & S., Guildhall. Dep. £2. Tenders by October 9.

SEPTEMBER 18.

***†Manchester Regional Hospital Board.**—Erection of burns treatment unit at Booth Hall Hospital. Thomas Ruffy (F.), Sunlight-hse., Quay-st. Dep. £2 2s. Tenders by October 17.

SEPTEMBER 19.

***Malden and Coombe B.C.**—6 houses at Maldenway. B.E., Municipal Offices. New Malden.

SEPTEMBER 20.

***†Newcastle Regional Hospital Board.**—Erection of proposed animal house. E. B. Jenkins, Dunira, Osborne-rd., Newcastle-upon-Tyne.

SEPTEMBER 22.

***†Essex C.C.**—Erection West Ockendon Barretts prim. sch., L.C.C. estate. H. Conolly (F.), County A., Chelmsford.

***Essex C.C.**—Adaptation of "Hassobury" as residential special school. County A., County Hall, Chelmsford.

***†Essex C.C.**—Junior school, Cressing-rd., Witham. H. Conolly (F.), County A., Chelmsford.

***†Gloucester, Stroud and the Forest Hospital Management Com.**—Erection of nurses' home at Great Western-rd., Gloucester. Dancey & Meredith, Bleak-hse., Station-rd., Gloucester. Dep. £2 2s. Tenders by October 19.

***Malden and Coombe B.C.**—18 flats at Coombe-rd. B.E., Municipal Offices, New Malden.

SEPTEMBER 24.

***Blackburn C.B.**—Alterations and additions to convert "West Bank," 92, Preston New-rd., into home for 24 aged persons and staff. H. Cooper (A.), Richmond-chbrs.

***Bristol T.C.**—34 houses at Henbury. City A., Eagle-hse., Colston-ave. Dep. £2 2s.

***†Deptford B.C.**—28 flats at Brockley-rd. C., Deptford Town Hall, New Cross, S.E.14. Dep. £2 2s. Tenders by October 24.

***†Lincoln (Kesteven) C.C.**—District nurses' house and garage, Rippingale, nr. Bourne. J. W. H. Barnes, County Architect, Sleaford. Tenders by October 12.

Orrell U.D.C.—24 houses at Kit Green housing site. E. & S., Council Offices, Orrell Post, near Wigan. Dep. £2 2s.

***†Plymouth T.C.**—48 flats at Whitleigh and seven aged persons' bungalows at Ernesettle. City A., Seymour-rd., Plymouth. Dep. £3 3s. for each scheme.

***†Westbury U.D.C.**—20 houses at Oldfield Park site. C., Laverton Institute, Westbury, Wilts. Dep. £2 2s.

SEPTEMBER 25.

***Bridgwater Boro.**—(a) 4 houses, Old Taunton-rd., and (b) 2 houses, Sunnymead. (a) F. W. Moverley, 13, Penel Orlieu; and (b) J. W. Gates, 30, High-st. Dep. £2 2s. each.

***†Hendon B.C.**—55 houses at Broadfields estate. B.E. & S., Town Hall. Dep. £3 3s.

***Malvern U.D.C.**—10 bungalows at West Malvern-rd. Surveyor & Water Engineer, The Council House, Malvern. Dep. £2 2s.

***†Northamptonshire C.C.**—Houses for district nurses at various sites. County A., County Hall.

SEPTEMBER 26.

***†Burton-upon-Trent C.B.**—2nd instalment of Hillside sec. mod. sch. B.S. Dep. £3 3s. Tenders by October 24.

Kidderminster B.C.—Conversion of No. 34, Mill-st. into offices and flats. B.E. & S., 110, Mill-st. Dep. £2 2s.

*Lincoln C.C.—New sewage disposal plant at Kesteven Farm Institute. County A., County Offices, Sleaford.

SEPTEMBER 28.

*Braintree and Bocking U.D.C.—5 houses and 20 flats, Church-la. estate, Braintree. H. Cook, architect, Town Hall, Braintree. Dep. £2 2s.

Bungay R.D.C.—10 houses at Hillside-rd. Buckingham & Berry, 10, Thorpe-rd., Norwich. Dep. £1 1s.

Dolgelley R.D.C.—Seven houses. M. T. Pritchard, Victoria-bldgs., Dolgelley. Dep. £2 2s.

*†Royston U.D.C.—11 houses, Ermine-close. C. E. Ball Ptnrs., quantity surveyors, Dilke House, Malet-st., W.C.1. Dep. £3 3s.

Saltash B.C.—Six houses at Warraton housing site. B.S., Church House. Dep. £3 3s.

SEPTEMBER 29.

*Berkshire and Reading Fire Authority.—Erection of 2 houses at Southcote-la. County A., Wiltonhse., Parkside-rd. Dep. £2 2s.

*†Carshalton U.D.C.—9 shops and 11 flats, The Mount. J. W. Wright, Clerk.

*Durham C.C.—Erection of M.O.W. hutting at various schools. County A., Court-la.

*Durham C.C.—Works at various schools. County A., Court-la.

*†Durham County Police Authority.—Conversion into police station, court, etc., of former Guardians Committee offices, Lanchester. G. R. Clayton (F.), architect, Court-la., Durham.

*†Herts C.C.—2 schools near Theobalds Farm, Theobalds-st., Boreham Woods. County Architect, Hertford.

*†Mitcham B.C.—Community centre at Pollards Hill. B.E. & S., Town Hall. Tenders by October 16.

OCTOBER 1.

*Chelmsford B.C.—10 houses at Chignall estate. B.E., Municipal Offices. Dep. £2 2s.

*Chertsey U.D.C.—Pair of houses, Fordwater-rd. E. & S. Dep. £1 1s.

Darfield U.D.C.—20 houses at Saltersbrook-rd. estate. E. & S., Council Offices. Dep. £2 2s.

Dartford T.C.—14 houses at Ladywood-rd., Darenth. E. & S., Council Offices. Dep. £2 2s.

*Litherland U.D.C.—32 houses and 18 bungalows Netherton Park estate. O. Williams & Sutcliffe, 24, Dale-st., Liverpool.

Stratford-upon-Avon.—25 houses at Redlands housing estate, Alcester-rd. B.E., Muncipal Offices. Dep. £2 2s.

*Thurrock U.D.C.—Eight houses, Stanley-rd., Bulpham. C. S. H. Hawkes, E. & S. Dep. £2 2s.

*Walthamstow B.C.—10 flats at Chingford-rd. Boro' A., Town Hall. Dep. £2 2s.

Westhoughton U.D.C.—24 houses at Hindley's estate. C., Town Hall. Dep. £2 2s.

OCTOBER 2.

Alcester R.D.C.—12 houses at Crooks-la. F. B. Andrews & Son, 95, Colmore-row, Birmingham. Dep. £2 2s.

Knutsford U.D.C.—40 houses at Warren-ave. estate. A. R. Butler, Council Offices. Dep. £2.

OCTOBER 5.

*Salford T.C.—66 flats at Islington-st. City Engineer's Office. Dep. £5 5s.

OCTOBER 6.

*Bournemouth C.B.—Extension to Pavilion, Westover-rd. Boro' A. Dep. £2 2s.

*Surrey C.C.—Repairs to parapets, Kingston Bridge. C.E., Kingston. Dep. £2 2s.

OCTOBER 8.

*Leeds T.C.—Public conveniences at Crossgates-rd. City A., Priestley-hse., Quarry Hill. Dep. £1 1s.

Manchester T.C.—Reconstruction of Bank-st. Bridge over River Medlock at Clayton. City Surveyor's Dept., Town Hall. Dep. £1 1s.

OCTOBER 10.

*Melton Mowbray U.D.C.—20 houses, Dorothy-ave. site. P. B. Sutton, E. & S. Dep. £2 2s.

OCTOBER 11.

*Godstone R.D.C.—16 houses at Careys Wood, Smallfield, or, alternatively, 26 houses at this site. E. & S., Council Offices, Oxted, Surrey. Dep. £2 2s.

OCTOBER 22.

*Mid-Wales Police Authority.—3 houses at Duffryn-rd., Llandrindod Wells. Architect's Office, County Hall, Llandrindod Wells. Dep. £2 2s.

OCTOBER 29.

*Preston C.B.—144 flats at Larches estate. B.S. Dep. £2 2s.

OCTOBER 30.

Chelmsford B.C.—Demolition of existing footbridge over River Can and erection of new r.c. bridge of 50 ft. span. B.E. & S., Muncipal Offices. Dep. £2 2s.

NOVEMBER 7.

*Southampton C.B.—Erection of infants' sch. at Rossington-ave. Howard V. Lobb & Partners, 20, Gower-st., London, W.C.1. Dep. £2 2s.

NOVEMBER 22.

*Lewes Boro'.—14 houses, Church-la. estate. C. T. Butler, B.E. & S. Dep. £5 5s.

NO DATE.

Blofield and Flegg R.D.C.—10 bungalows at Blofield. E. Boardman & Son, Queen-st., Norwich. Dep. £2·2s.

Hartley Wintney R.D.C.—10 houses at Farnham-rd. C., Council Offices.

*Hatfield Development Corporation.—52 houses, Roe Green estate area "D." J. E. McComb, General Manager, 4, Wigmores South, Welwyn Garden City.

"THE BUILDER" PRICES

STOCK BRICKS

Prices of Stock Bricks are increased as from September 10, as follows:

Revised prices—First Hard Stocks	£10	3	0
Second Hard Stocks	£9	13	0
Mild Stocks	£8	8	0

All loaded free into lorry at the works.

W.I. TUBES

Correction of prices given in September 7 issue.

TUBES AND TUBULARS

Galvanised—

Class A	.. List price	+	1½ per cent.
Class B	.. „ „	+	9½ „
Class C	.. „ „	+	24½ „

Black

Class A	.. List price	−	32½ per cent.
Class B	.. „ „	−	23½ „
Class C	.. „ „	−	12 „

STANDARD METAL WINDOWS

The Minister of Works has authorised an increase of 7½ per cent. on the present list prices of standard metal windows made in accordance with B.S.990. This increase, due to a recent rise in the cost of materials, is being applied by The British Metal Window Manufacturers' Association, Ltd., provisionally as a general increase, pending the preparation of a new detailed price schedule.

As a consequence of the general 7½ per cent. increase in prices, the extra charge for the percentage addition in respect of rust-proofing is reduced from 25 per cent. to 23½ per cent.

The above alterations in price are effective as from September 4.

BATH AND PORTLAND STONE

The Bath and Portland Stone Firms, Ltd., inform us that the prices of Monks Park stone and Box Ground stone delivered at Lambeth Station are 6s. 2d. and 7s. 2d. per ft. cube, respectively.

Details of increases in cement prices authorised by the Minister of Works will be found on page 367.

*Midhurst R.D.C.—8 cottages and 4 flats. T. Greenfield. F.R.I.B.A., "Newstead," Midhurst, Sussex. Dep. £1 1s.

*Ongar R.D.C.—22 houses on the Shelley estate. E. & S., Bowes Field, High-st., Chipping Ongar, Essex. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

OCTOBER 8.

*L.C.C.—Repainting Battersea Bridge. Chief E Dep. £2.

ROADS, SEWERAGE AND WATER WORKS

SEPTEMBER 24.

†Hertford R.D.C.—Main sewerage and sewage disposal works. D. Balfour & Sons, consultant engineers, 131, Victoria-st., Westminster, S.W.1. Dep. £5 5s.

SEPTEMBER 27.

Newport C.B.—Reconstruction of part of St. Julians-rd. B.E., Civic Centre, Newport, Mon. Dep. £2 2s.

SEPTEMBER 28.

Bala U.D.C.—Water mains and incidental works. T. Lloyd Davies, Council Offices. Dep. £3 3s.

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SEPTEMBER 29.

Sunderland C.B.—Site preparation works at Castletown. B.E., Town Hall. Dep. £5 5s.

OCTOBER 1.

Shardlow R.D.C.—Water supply works. Elliot & Brown, Stanley-hse., Pelham-rd., Nottingham. Dep. £3 3s.

Wetherby R.D.C.—Western area sewerage scheme. W. K. Rodwell, 29, High-st. Dep. £3 3s.

*†Wycombe R.D.C.—Roads, sewers and incidental works at Glory Hill estate. L. I. Cockerham (L.), 100, Easta-st., High Wycombe. Dep. £2 2s.

OCTOBER 4.

Cheshire C.C.—Surface water drainage at Davenham. County Surveyor, Backford Hall, nr. Chester. Dep. £2 2s.

OCTOBER 5.

Marlow U.D.C.—Roads and sewers in connection with the Little Marlow-rd. housing estate. Henry Cooper & Sons, chartered quantity surveyors, 6, The Forbury, Reading. Dep. £2 2s.

OCTOBER 6.

Rickmansworth U.D.C.—Roads and sewers. E. & S., Council Offices. Dep. £2 2s.

OCTOBER 8.

Southampton C.B.—Laying and jointing of about 10 miles of trunk water mains. Waterworks Office, Civic Centre. Dep. £5 5s.

OCTOBER 9.

Lutterworth R.D.C.—Laying and jointing of about 12 miles of water mains. Pick, Everard, Keay & Gimson, 6, Millstone-la., Leicester. Dep. £2 2s.

OCTOBER 10.

Holywell U.D.C. and R.D.C.—Trunk main for joint water supply. Williams & Clarke, 5-6, Godstall-chbrs., Chester. Dep. £5 5s.

GENERAL BUILDING WORK

(LONDON)

Deptford.—FLATS.—Plans by H. V. Ashley & Winton Newman, L./A.R.I.B.A., 3, Verulam-bldgs., Gray's Inn, W.C.1, for 28 flats at Brockley-rd., have been approved by B.C.

Hendon.—HOUSES.—Plans by Boro' Engineer & Surveyor's Dept. for erection of 55 houses at Broodfillar estate have been approved by B.C.

Hendon.—REPAIR FACTORY.—B.C. approval has been given for proposed erection of repair factory at North Circular-rd., Hendon, for National Cash Registers, Accounting and Adding Machines.

Hendon.—OLD PERSONS' HOME.—B.C. have approved plans by Riley & Glanfield, F./A.R.I.B.A., 6, Raymond-bldg., Gray's Inn, for erection of home for old people at West Heath-rd., N.W.3, for the Hendon Old People's Housing Society, Ltd.

Mitcham.—COMMUNITY CENTRE.—B.C. have approved plans for erection of community centre at Pollards Hill. Architects are Collcutt & Hamp, F./A.R.I.B.A., 126, Wigmore-st., W.1.

(PROVINCIAL)

Airoborough.—U.D.C. have prepared draft layout to provide for between 600 and 650 houses, blocks of two- to three-storey flats, primary school, cinema and public-house at 105-acres site in Shawla. Scheme is to link Guiseley and Yeadon. Est. cost, £1,000,000.

Annfield Plain.—Ransome & Marles, Ltd., propose erection of £300,000 ball-bearings factory. Architects are Taylor & Napper, 56, Eldon-pl., Newcastle-on-Tyne.

Birmingham.—E.C. approved erection of sec. mod. sch. at Shard End, £215,545, and development of Astley Hall, as a residential sch. Est. cost, £24,232.

Birmingham.—Corporation's proposal to build £40,000 block of slipper baths at Heath-st., Winson Green, has been approved by M.L.G. & P.

Chesterfield.—B.C. approved erection of 70 houses at Calow-la. site, and 96 at Newbold estate.

Coventry.—M.L.G. & P. have confirmed corporation's compulsory purchase order in respect of 7½ acre site at Barras Heath for provision of new wholesale market.

Darlington.—Boro' A., E. A. Tornbohm, has prepared plans for 19 pairs of houses at Springfield housing site and tenders are being obtained.

Farnborough.—The Container Reclamation Co., Ltd., 82-94, Seymour-pl., London, W.1, have been granted a licence for erection of 30,000 sq. ft. factory at Farnborough. Architect is Edward D. Mills, F.R.I.B.A., 16, Carlisle-st., Soho-sq., W.1.

Golborne.—U.D.C. seek loan of £43,287 for houses at Maple-av. site.

Halifax.—T.C. to submit scheme to Ministry for an outdoor bathing pool at Royal Hall-gdns. site. Est. cost, £46,000.

Hyde.—B.C. seek loan of £107,107 for 74 houses at Cheetham Fold and Harbour Farm estates.

Jarrow.—Housing Com. has approved plans by Boro' E. for erection of 56 houses at Leam-la., to cost about £71,000. M.L.G. & P. has approved T.C.'s plans for 12 flats at Bilton Hall estate and 72 houses and 48 flats at South Leam-la. estate.

Manchester.—Regional Hospital Board approved centralisation of laundry services and installation of central heating in wards at Wesham Park, £11,707.

Manchester.—Corporation approved plans for erection of 81 flats at Northern Moor, Wythenshawe, est., cost, £108,510.

Motherwell.—Plans have been approved for erection of 12 houses at Windmillhill-st. Est. cost, £20,000.

Newcastle.—T.C. Housing Com. recommend acquisition of 51 acres of land, for £15,000, at Fawdon, for housing, education and allotment purposes.

Nottingham.—T.C. approved layout of six acres at Strelley-rd. for baths and police operational centre.

Notts.—E.C. to include, in 1952-3 programme, two-stream infants' school at Eastwood Brookhill Leys Primary; three-stream technical at Bramcote Hills Sec. Tech.; two-stream at Hucknall Ruffs Farm; and three-stream Southwell Sec. Mod.

Preston.—E.C. approved prim. sch. at Ribbleton. Est. cost, £106,510.

Rotherham.—R.D.C. seek loan of £35,308 for 10 houses at Catcliffe and 16 at Brinsworth.

Salford.—Trinity Clearance Area scheme to commence October, involving demolition of 462 houses and erection of 363 flats.

Shoreham.—U.D.C. Housing Com. have appointed Reginald Browne as architect for scheme at Hammy-la. estate to provide for erection of houses.

Stevenage.—Plans are being prepared for a parish church of St. Andrew's in the new town area. Est. cost, £15,000.

Tutbury.—R.D.C. propose 20 houses and four bungalows at Burnside Rolleston site

Tyldesley.—U.D.C. received approval for police houses between 21 and 37 Sale-la.

Wallsend.—Wallsend Slipway & Engineering Co., Ltd., to build prefabricating workshop at their works.

Warwickshire.—E.C. propose following schools in 1952-3 programme:—Solihull Dorridge County jun. sch., £51,000; Kenilworth North County jun. & inf., £45,000; Nuneaton Alderman Smith County (Phase I), £90,000; Rugby Dunsmore County (2nd instalment boys), £90,000; Polesworth proposed County Practical Block, £30,000; Solihull Lyndon County (Phase II), £135,000; and Mid-Warwickshire sch. with rural bias, £135.000. All est. costs.

Wem.—U.D.C. propose 24 flats and 14 houses at New-st. site.

West Riding.—E.C. recommended for approval inclusion of following schools in 1952 programme:—Monteney inf., Ecclesfield, £12,812; Monteney jun. mixed, Ecclesfield, £20,000; Mansell inf., Ecclesfield, £13,481; Worsborough Dale sec., £75,000; Grimethorpe sec., £100,000; Whiston jun. mixed and inf., £29,500; Dalton inf., £38,559; Kirk Sandall jun., mixed and inf., £43,500; Mexborough inf., £25,080; Kirkby-av., Bentley jun., mixed and inf., £11,000; Barnborough jun., mixed and inf., £24,800; Parson Cross R.C., £43,120; Royston inf., £44,200; and Maltby Grammar, £30,000. All est. costs.

Widnes.—The Portland Cement Co., Tothill-st., London, S.W.1, propose to build cement works at Widnes.

Wigston.—U.D.C. Housing Com. approved plans for further 57 houses.

Wolverhampton.—Factory at Dixon-st., for W. B. Concrete Products, Ltd. Architect is W. H. Page, 25, Tettenhall-rd.

Worcs.—E.C. approved sketch plans for College of Further Education at Kidderminster.—Propose gymnasium, music and craft rooms at Shenstone Training College in 1952-3 programme. Est. cost, £28,200.

Worksop.—B.C. propose modernisation of Town Hall. Est. cost, £30,000.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modifications*.
¶ Denotes *accepted by H. M. Government Departments*.

Bedfordshire.—Construction of an airfield to cost over £3,000,000 at the National Aeronautical Establishment, nr. Bedford: *John Laing & Son, Ltd., London, N.W.7.

Billingham-on-Tees.—96 houses at Roseberry-rd. No. 4 site, for U.D.C. Architects, Kitching & Co., 21, Albert-rd., Middlesbrough: *Stephen Coates, Ltd., Langbaurgh-pl., North Ormesby, Middlesbrough, £141,121 (subject to M.L.G. & P. approval).

Bingley.—Houses for U.D.C.—10 at Cullingworth: *Hanson Bailey, Ltd., Industrial-st., Bingley; and 10 at Wilsden: *F. W. Heaton (Builders), Ltd., Russell-st., Bingley.

Birmingham.—Shops, offices, at Grosvenor House site: *Sir Robert McAlpine & Sons (Midland), Ltd., £250,000 (est. cost).

Bradford and Melksham.—Cornish Unit Flats at Winsley and Whitley, for R.D.C.: *Sellick, Nicholls & Co., £15,536.

Corby.—R.C. sec. mod. sch., for E.C.: *Bernard Sunley & Sons, Ltd., 24, St. James-st., London, S.W.1., £106,863.

Crawley Development Corporation.—110 dwellings and 36 garages at Northgate site No. 7. A. G. Sheppard Fidler, Chief Architect, Crawley Development Corporation, Crawley, Sussex: *Y. J. Lovell and Son, Ltd., 10, Gildredge-rd., Eastbourne, £199,575.

Eaton.—75 houses at Granville-rd. estate, for U.D.C.: *W. J. Emmerson, Middlesbrough, £66,274 (43); *A. Payne, Redcar, £51,469 (32).

Gateshead.—Erection of offices and garage at Hawks-rd., for E. N. Mackley & Co., Ltd. Architect, C. S. Errington, 46, Grainger-st., Newcastle-on-Tyne: *Wilson (Engineers, Newcastle), Ltd., Dean-st., Newcastle-on-Tyne.

Glasgow.—New buildings at Cumbernauld-rd., Millerston, for the Millerston United Free Church of Scotland: *E. S. Laurie & Co., Ltd., 19 to 27, St. Mango-st., Parliamentary-rd., Dennistoun, Glasgow, N.E.

Glasgow.—New primary school at Cranhill. Mr. John MacNab, F.R.I.B.A., architect, 129, Bath-st., Blythswood, Glasgow, W.C.2: *The Bristol Aeroplane Co. (Housing), Ltd., Weston-super-Mare, £12,396.

Gosforth.—Alterations to Empire Club. Architect, Morton A. Mackenzie, 1, Eldon-sq., Newcastle-on-Tyne: *J. H. Fisher & Co., Kenton-la., Gosforth.

Haverhill.—12 houses and two Duplex flats, Parkave. site off Whithersfield-rd., Haverhill for U.D.C. D. C. Denton-Smith, L.R.I.B.A., 40, Regent-st., Cambridge. T. J. Archer and Sons, Ltd., Gt. Yeldham, Essex, £17,356.

Inverness.—Houses on the Old Drummond house site. Mr. James Blackwood (F.), architect, Councilchbrs., Inverness: *George Wimpey & Co., Ltd.

Liverpool.—672 houses at Kirkby, for Corporation: *Unit Construction Co., Ltd., £1,016,730.

¶London (Admiralty).—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty: *St. Merryn*: extension to workshop, T. E. Davey and Son, 20, Fernleigh-rd., Wadebridge, Cornwall. *Baverstock*: steelwork gable ends to hangars, Walker Bros., Ltd., Constructional Engineers, Victoria Ironworks, Walsall.

¶London (Air Ministry).—List of contracts to value of £500 or over placed by Directorate of Contracts for week ended September 8:

Building work: F. Shepherd and Son., Ltd., York; Higgs and Hill, Ltd., London, S.W.8; Y. J. Lovell and Son Ltd., Gerrards Cross. *General maintenance work*: Robinson and Davidson, Ltd., Dumfries. *Resurfacing work*: The General Asphalite Co., Ltd., London, S.W.1.

Surfacing dressing work: W. and J. Glossop, Ltd., Exeter. *Painting work*: Geo. Jones and Son (Cttrs.), Ltd., Liverpool 6. *Installation of coal handling plant*: Bennis Combustion Ltd., Bolton, Lancs. *Installation of Fire deluge equipment*: Mather and Platt, Ltd., Manchester 10.

¶London (M.O.W.).—Contracts placed by M.O.W. for week ended September 1:—

London: Victoria and Albert Museum, repairs and decorations to galls. 5, F. Troy & Co., Ltd., 131, Gt. Suffolk-st., S.E.1; repairs and interior decorations to galls. 76, 77 and 78, John Mowlem & Co., Ltd., 91, Ebury Bridge-rd., S.W.1. *Hampshire:* P.O. Garage, Unicorn-rd., Portsmouth, adaptations, Geo. Riches, Ltd., 215, West-st., Fareham. *Herefordshire:* M./L. Headquarters, Reeds School, Watford, interior and exterior painting, T. H. Kenyon & Sons, Ltd., Chancellors Works, Croxley Green, London, W.9. *Lincolnshire:* H.P.O., Grantham, extension of S.O., W. Foster & Sons, 41, Castle Gate, Grantham. *Middlesex:* 368-370, Pinner-rd., Harrow, alterations to form new branch P.O., E. J. Lacy & Co., Ltd., 344a, High-st., Willesden, N.W.10. *Sussex:* Churchla., Lewes, erection of 36 houses, Ringmer Building Works, Lewes.

¶London (War Dept.).—Works contracts placed by War Dept. during week ended September 1:—

Ross and Cromarty: Heating and ventilating, The Brightside Eng. & Foundry Co., Ltd., Edinburgh. *Cumberland*: Painting and decorating, Reid Bros., Carlisle. *Midlothian*: Building work, G. & R. Cousin, Edinburgh. *Stirlingshire*: Building and electrical work, B. Reynolds & Sons, Ltd., Stirling. *Monmouthshire*: Miscellaneous, R. W. Moon, Ltd., Newport (Mon). *Lancashire*: Miscellaneous, Joe Johnson (Contractors), Ltd., Lancaster.

Herefordshire: Structural steelwork, Lambhill Ironworks, Ltd., Glasgow. *Glamorganshire*: Building work, G. Percy Trentham, Ltd., Birmingham. *Surrey*: Hutting, R. C. Radford, Farnham. *Oxon*: Building work, T. Ringham & Co., Ltd., Wimbledon. *Hampshire*: Building work, Christiani & Neilsen, Ltd., London, S.W.1; Miscellaneous, James Ball & Son, Ltd., Cowes (I. of W.).

Wiltshire: Painting, Downing, Rudman & Bent, Ltd., Chippenham. *Hampshire*: Roadwork, Wainwright Paving & Contracting Co., Portsmouth; Roofing work, Bitumen Industries, Ltd., Slough. *Oxon*: Roadwork, Val de Travers Asphalte Paving Co., Ltd., Bicester. *Hampshire*: Building work, Kirk & Kirk, Ltd., Putney.

Surrey: Painting and decorating, W. T. Pickering & Sons, Ltd., Watford. *Middlesex*: Roadwork, W. & J. Glossop, Ltd., London, W.8. *Bedfordshire*: Miscellaneous, S. T. Harvey & Co., Ltd., Luton. *Kent*: Miscellaneous, H. Goodsell, Maidstone. *Essex*: Painting, G. Jones & Son (Contractors), Ltd., Kensington. *Kent*: Roadwork, W. H. Benstead & Son, Ltd., Maidstone.

Longbenton.—10 houses at Front-st., for U.D.C.: *G.S.W. Urban Development Co., 38, Side, Newcastle-on-Tyne.

Monmouth.—20 houses at Dingestow, for R.D.C.:—

S. J. Kear & Sons, Coleford ...	...	... £47,867
Davies, Jones & Clench, Raglan ...	...	43,931
Ashmores (Gloucester), Ltd. ...	...	43,695
*J. N. Williams & Sons, Ellwood ...	...	40,297

(Subject to Ministry approval.)

Newcastle-on-Tyne. — Extensions to Heaton Foundry. Architect, C. S. Errington, 46, Grainger-st., Newcastle: *Stephen Easten, Ltd., Westgate-grange, Newcastle.

Notts.—Garage, workshop, at West Bridgford Police Station: *W. & J. Simons, Ltd., Gordon-rd., West Bridgford, Nottingham, £9,320.

Scottish Special Housing Association, Ltd.—*Site Servicing.*—Wards of Pitforthie, Brechin (68 tradl., 32 timber), Wm. Briggs & Sons, Ltd., E. Camperdown-st., Dundee, footpaths; Drongan, Ayrshire (90 tradl.), Hay & Anderson, 33, Innerwood-rd., Kilwinning, stockproof boundary fencing; Gorebridge, Midlothian: Kingsley Bros., Ltd., Newbyres, Gorebridge, stockproof boundary fencing; Livingstone-st., Clydebank: Barnet & Morton, Ltd., High-st., Kirkcaldy, boundary chain link fencing; Oakley, Fife: H. U. Smith, 31, St. Andrew-sq., Edinburgh, spraying and chipping of carriageways; Methilhill, Buckhaven: A. Hardie, 37, Ossian-cres., Methil, levelling ground; Paris-av., Denny: James Strang & Son, Polmont, boundary fencing; Beith-rd., Johnstone (6 tradl.): James Small, 31, Argyle-st., Paisley, plumber; James Kilpatrick & Son, Kelvin House, River Cart-walk, Paisley, electrical; Muiredge, Buckhaven (50 Cruden): Barnet & Morton, Ltd., High-st., Kirkcaldy, fencing; Poplar-av., Bishopton (6 tradl.): Grant & Burns, Ltd., 88, Kinning-st., Glasgow, C.5, carpenter and joiner; Robert Rome & Son, 20, Woodside-av., Rutherglen, plumber; Alfred Cooke, 43, Manse-st., Renfrew, painter; Grant & Burns, Ltd., 88, Kinning-st., Glasgow, C.5, excavator, brick; George G. Kirk, Ltd., 20, Cooke-st., Glasgow, C.5, glazier; William Lawrie, 20, Lambhill-st., Glasgow, S.1, electrical; Hallyburton, Angus (7 tradl.): G. K. F. Martin, 493, Brock-st., Broughty Ferry, brick; D. D. Gibb, Queen-st., Coupar Angus, carpenter and joiner; James S. Laburn, Ltd., Corralbank-ter., Blairgowrie, plaster; W. R. McLaren, Braemont, Rattray, Blairgowrie, roof tiles and roughcast; Walter Smith, 23, Kincardine-st., Dundee, glazier; Allan C. Stirton, 1, Dunarn-st., Newtyle, Angus, painter; Harold Cocker, The Cross, Coupar Angus, electrical; Belvedere Wood, Bathgate (96 tradl.): George G. Crichton, Livery-st., Bathgate, handrails; Beith-rd., Johnstone (6 tradl.): Scottish Gas Board, Johnstone, gas services; Wyndford, Broxburn (132 Miller): S.E. Electricity Board, St. Ninian's-rd., Stirling, electricity services; Pulpit Rock, Oban (20 tradl.): Barnet & Morton, High-st., Kirkcaldy, fencing; West End, Fraserburgh (32 Miller): North of Scotland Hydro Electric Board, Elgin, electricity services; Welton-rd., Mauchline (76 tradl.): Northern Sports Ground Construction Co., Ltd., 133a, George-st., Edinburgh, fencing; Gorebridge, Midlothian (128 Atholl, 142 Cruden, 152 tradl.): Northern Sports Ground Construction Co., Ltd., 133a, George-st., Edinburgh, fencing; Barcladine, Aucehndarroch, Glenachulish, Kentallon, Kinloch Rannoch (46 tradl.): Limmer & Trinidad Lake Asphalte Co., Ltd., 45, Hope-st., Glasgow, floor finish; Northfield, Aberdeen (126 Weir): Weir Housing Corporation, Calder-st., Coatbridge, all trades; Northfield, Aberdeen (126 Weir, 74 Cruden, 100 Miller, 100 Wimpey): North of Scotland Hydro Electric Board, 16, Rothesay-ter., Edinburgh, electricity services; Poplar-av., Bishopton (6 tradl.): South-West Scotland Electricity Board, Clyde Sub Area, electricity services; Various schemes (2,500 houses): Durastic, Ltd., Glasgow, floor finish; Gorebridge, Midlothian (20 tradl., 30 Cruden): Scottish Gas Board, Calton Hill, Edinburgh, gas services; Penicuik, Midlothian (230 various): Scottish Gas Board, Calton Hill, Edinburgh, gas services; Beith-rd., Johnstone (6 tradl.): South-West Scotland Elec. Board, 205, St. Vincent-st., Glasgow, C.2, electricity services; Blackwood, Lanarkshire (44 Atholl): South-West Scotland Elec. Board, 205, St. Vincent-st., Glasgow, C.2, electricity services; Craigens, Cumnock (68 Atholl, 76 Weir): South-West Scotland Elec. Board, Greenholme-st., Kilmarnock, electricity services; Caponfiat, Haddington (26 tradl.): Scottish Gas Board, Chester-st., Edinburgh, gas services; Corriedoo, Kirkcudbright (2 timber): Alexander & Son, Edinburgh, handrail; Succoth, Argyllshire (12 timber): Barclay & Mackenzie, Hamilton-rd., Dunoon, all trades; Tosh's Park, Carradale, Argyllshire (13 timber): Malcolm Martin, 17, Glebe-st., Campbeltown, all trades; West Kilbride-rd., Dalry (150 timber, 10 tradl.): Geddes & Springthorpe, 41, Constitution-st., Edinburgh, fencing; Rowardennan, Stirlingshire (6 timber): John Orr, Stirling-rd., Drymen, all trades; Mains of Fintry, Dundee

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Site Servicing by Direct Labour

Fergushill-rd., Kilwinning (76 Weir): first stage Cairnhill, New Cumnock, second stage.

Maintenance

Watling-st., Motherwell (50 B.I.S.F.): J. Johnstone, 50/52, Crosshill-st., Motherwell, external painter; New Stevenston, Lanarkshire (32 Atholl): J. Mason, 7, N. Cross-mansions, Bellshill, external painter; Sighthill, Edinburgh (13 various): Wm. Logie, 3, Upper-row, Edinburgh, external painter; Newarthill, Lanarkshire (52 Atholl): A. McCracken, 23, Lamb-st., Hamilton, external painter; Clackmannan (12 brick): Neuchatel Asphalte Co., Ltd., 37, George-st., Edinburgh, refelting roofs; Easthouses, Midlothian (86 tradl., 100 B.I.S.F.): T. W. Scott & Co., 62, Castle-st., Edinburgh, external painter.

Sheffield.—12 flats at Duke-st., for T.C.: *Direct Labour, £22,288.

Stourport-on-Severn.—35 houses at Walshes Farm estate, for U.D.C. Godwin, Clist & Greenway, FF.R.I.B.A., Bank-bldgs., Kidderminster, and quantities by W. A. Greenway, F.R.I.C.S.: *Batham & Beddall, Ltd., 9, Moor-st., Brierley Hill, Staffs, £48,248.

Sunderland.—14 houses at Castletown, for R.D.C. C. Emmerson, S.: *Direct Labour.

Sunderland.—Additions to works of North-East Metal Fabrications, Ltd., Sheepfolds, Sunderland: *Direct Labour.

Tarvin.—Four houses at Keysbrook-av., Tettenhall, for R.D.C.: *John Wright & Sons, Huxley, £5,040.

Tydesley.—40 houses at Sherkerley estate, for U.D.C.: *James Alfred. Ltd., Leigh, £50,640.

Wallasey.—24 houses at Leasowe-rd., for B.C.: *J. Tate & Sons, 241, Wallasey Village, £40,962.

Whitchurch.—38 houses at Sedgford, for U.D.C.: *Thos. Warrington & Sons, Ltd., 84, Station-rd., Ellesmere Port, £52,553.

Whitley Bay.—26 houses at Foxhunters' site, for U.D.C.: *John Urpeth, "Fairholme," North Ridge, Bedlington.

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